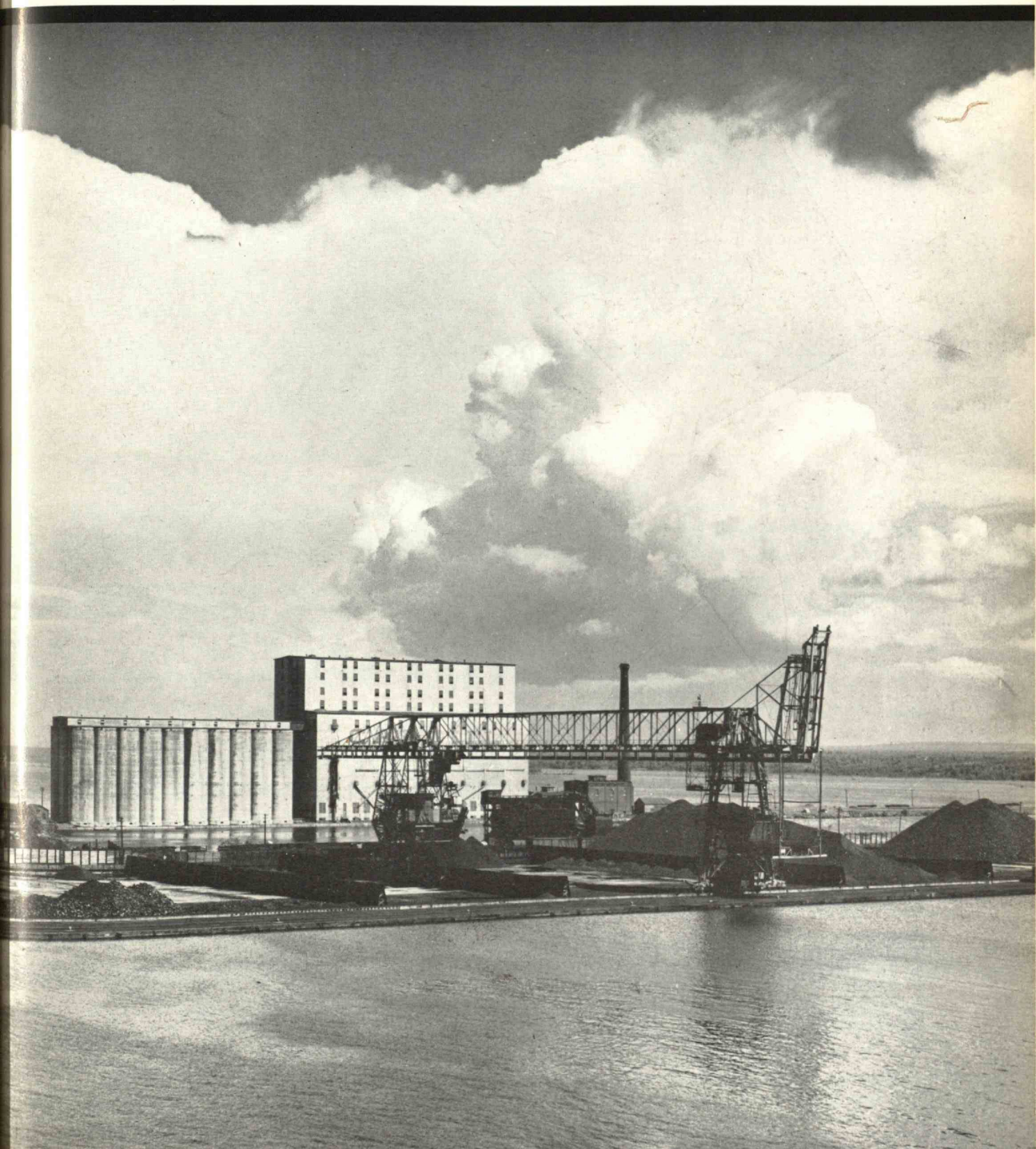
TECHNOLOGY REVIEW

June 1954



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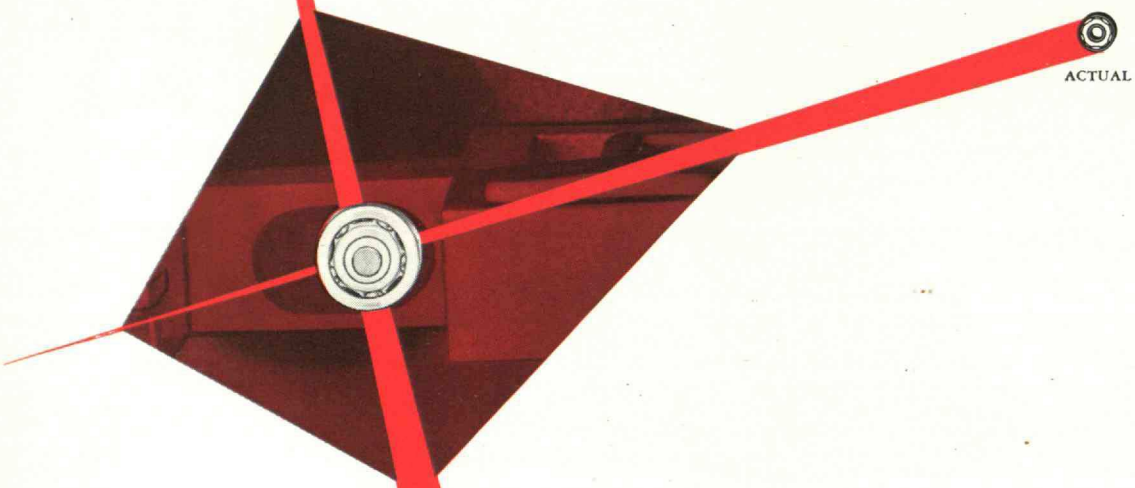

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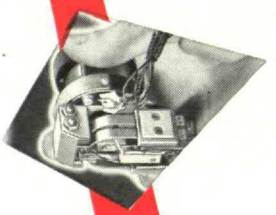
accurate concentricity of miniature bearing roller guides increases relay sensitivity and dependability



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THE TECHNOLOGY REVIEW, June, 1954, Vol. LVI, No. 8. Published monthly from November to July inclusive at Emmett Street, Bristol, Conn. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50. Canadian and Foreign subscription $4.00. Entered as second-class matter December 23, 1949, at the Post Office at Bristol, Conn., under the Act of March 3, 1879.

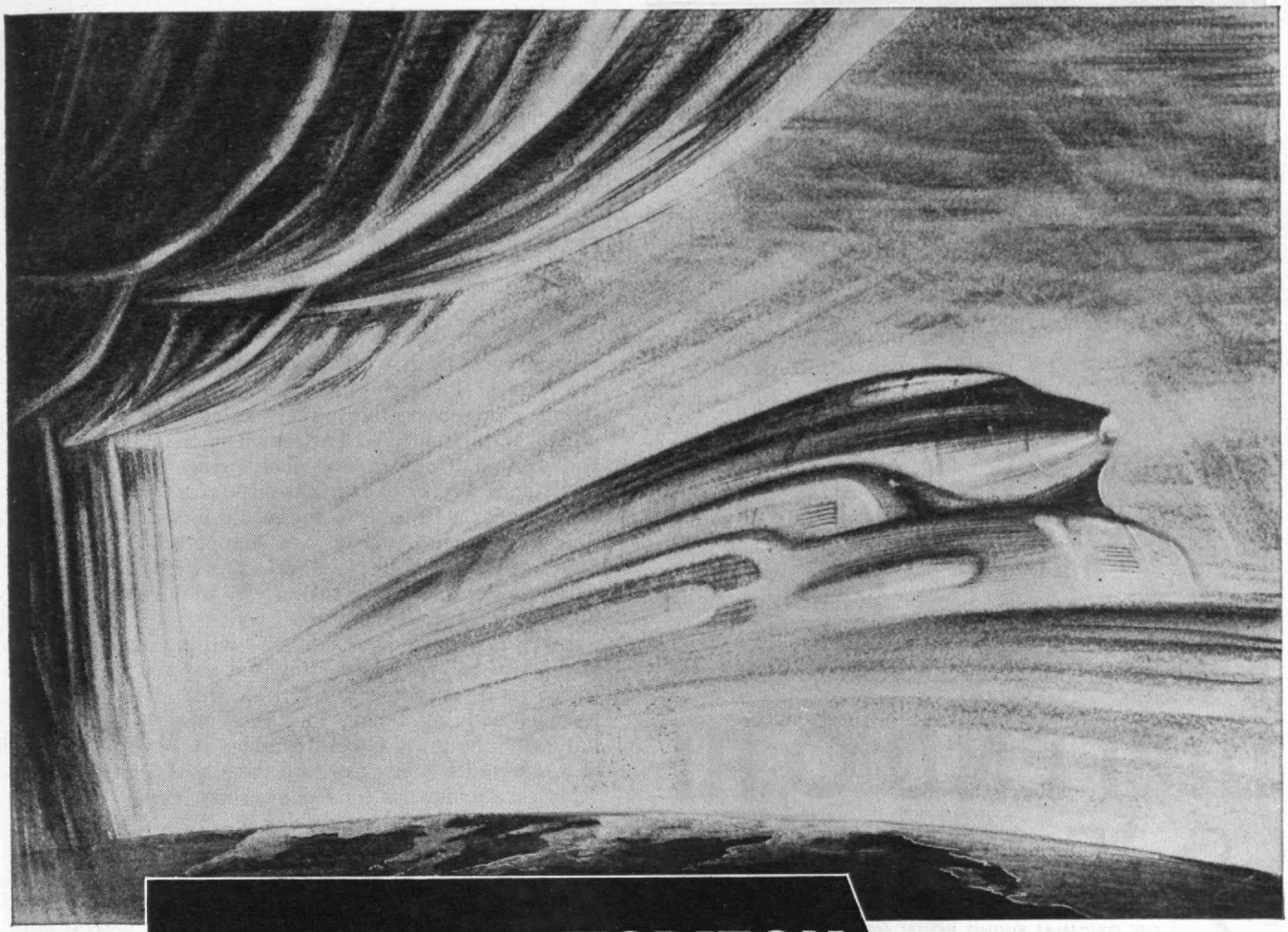
THE TABULAR VIEW

Tired. — What makes us tired? Why do we sleep? Could we get along without sleep? If so, for how long a period, without deleterious results to our health? These are some of the questions for which a search is made by FREDERIC W. NORDSIEK, '31, in his article "Tired Nature's Sweet Restorer" (page 393). But for all of the emotional and psychic effects of sleeplessness, the basic mechanism of sleep remains a vast unknown. An editorial associate since 1944, Mr. Nordsiek is a frequent contributor to The Review and other journals when he can spare time from his duties in administering research activities of the American Cancer Society. He is a fellow and life member of the American Public Health Association, and past chairman of the Food and Nutrition section.

Inventors. — The future of discovery and invention in the broad field of technology is examined in this issue by J. L. B. BLIZARD, '49, whose article appears on page 395. After receiving the A.B. degree with high honors from the University of Rochester, and the Ph.D. degree from M.I.T., in 1945 and 1949, respectively, Dr. Blizard became lecturer and assistant professor of physics at Hofstra College, and for the past year has been lecturer at the University of Connecticut. Dr. Blizard is now studying the development of science and technology and scientific man power at Columbia University. It is held that overemphasis on applied research at the present time, at the expense of research in basic science, is a practice well worth serious attention.

Fish. — Following up his article on the dairy industry in the November, 1953, issue of The Review, MILTON E. PARKER, '23, devotes attention in this issue (page 401) to the sea-food industry. Professor Parker is concerned that the rate of population growth exceeds that of our food industry – at least so far as concerns protein production. He looks to the sea to provide ample bounty to our supermarkets and our pharmaceutical and nutrition industries. Professor Parker has been engaged in a wide range of activities in the food industry, becoming manager of production of the Beatrice Foods Company in 1936, and more recently, food-consulting engineer. Since 1948 he has been head of the Department of Food Engineering at the Illinois Institute of Technology.

For the Future. — PAUL COHEN, '35, former editor of *The Tech* and editorial associate of The Review since 1938, provides readers with a brief review of the growth of research activities in the United States during the past decade (page 405). Calling organized research "the generative organ of the industrial state," Mr. Cohen emphasizes that the three and three-quarter billion dollars spent for research during 1952 is truly an investment in the future. Since his graduation from the Institute's Course in Mechanical Engineering, Mr. Cohen has been a research engineer by vocation and a skillful writer and interpreter of science and engineering by avocation.



BEYOND THE HORIZON....

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MAIL RETURNS

Eloquence of Sculpture

FROM WELLES BOSWORTH, '89:

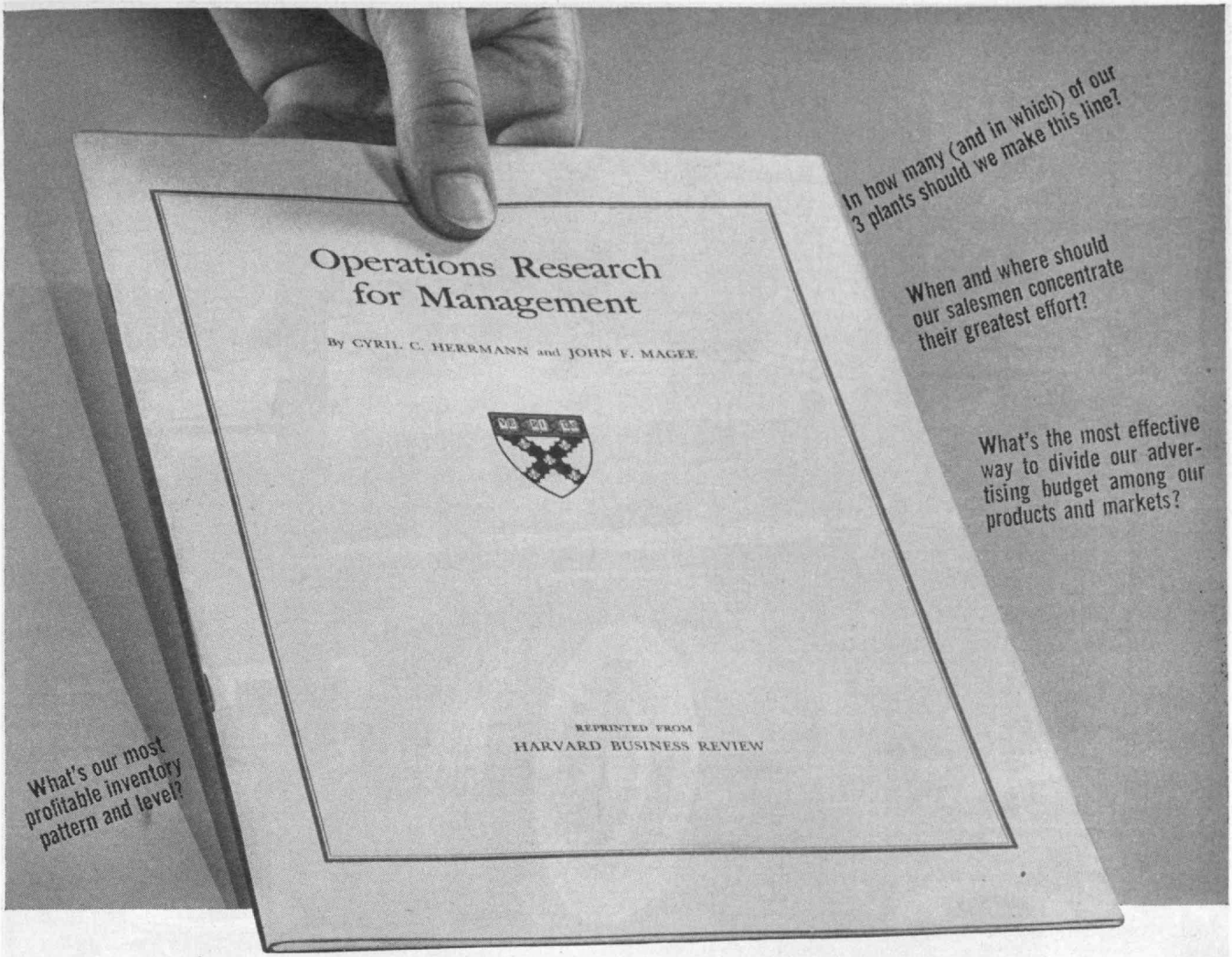
Your article about the history of the architecture of M.I.T. in the April Review has of course interested me* probably more than any other of your readers . . .

I must tell you about the Rogers Building and the statues, which those four pedestals are so patiently waiting for. I have a high regard for the eloquence of sculpture in connection with architecture. I showed on my first project for the M.I.T. group a great heroic-size statue, representing the spirit of knowledge, on the axis of the Main Court. I have shown it on every drawing and painted it on airplane photos since the beginning, and I hope keenly to see it realized, for it would be so fine there as a keynote to the whole institution, like the statue of Athene was on the Acropolis, or the Alma Mater at Columbia in New York. . . . But so far, committees always think the easiest way to cut down cost in building is leave off sculpture.

I well remember Dr. Compton's writing me asking me to describe to him how I visualized the new Rogers entrance and vestibule to M.I.T. from Massachusetts Avenue, and my telling him there ought to be four statues of the great Greek founders of modern learning in it. He and I later agreed on them as Aristotle for the Sciences, Archimedes for Engineering, Ictinus (and Callicrates looking over his shoulder at a plan of the Parthenon) for Architecture. Seeing these statues would certainly inspire every student and teacher of M.I.T. to follow their example and hope to become "great." The pier of masonry back of each statue was to bear incised outlines illustrating their inventions, like the water screw of Archimedes and the Parthenon of Ictinus, or famous words of theirs. The cost of this sculpture was relatively small, as the statues could well be made of artificial stone cut from plaster models. What fine memorials these would make, for distinguished M.I.T. graduates. The idea must be continually kept alive, and I hope you may find a way of bringing it somehow into print where the Alumni will see it.

Vaucresson, Seine et Oise, France

* [Mr. Bosworth is the architect of the main group of M.I.T. Buildings erected in Cambridge in 1916.—Ed.]



New Concept Simplifies Business Decisions

Management now has a new way to attack business problems . . . operations research. Here are a few diverse problems it has helped to solve:

- Directing salesmen to the right accounts at the right time.
- Fitting incentive payment plans to management objectives.
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How It Works . . . Operations research makes possible these accomplishments and many others because (1) it helps single out the critical issues which require executive appraisal and analysis, and (2) it provides quantitative analyses to support and guide executive judgment. It eases the burden of effort and time on executives but increases the potential of their decision-making role. Thus operations research contributes toward better management.

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Cambridge Common (May Contents page) contains the ancient cannon which was used to bombard General Gage's Army in Boston during the siege of 1775; it also contains the monument, with statue of Lincoln, as a memorial to those who died in service during the Civil War.

Raymond E. Hanson

How Well Do You Know Boston?

Believe it or not, this quiet, idyllic spot is near one of the busiest and most active business corners of Boston. The point at which the exposure was made makes the difference. Can you identify this stone building and tell where it is located? If not, see the Contents page of the July issue.

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CONTENTS *for June, 1954*

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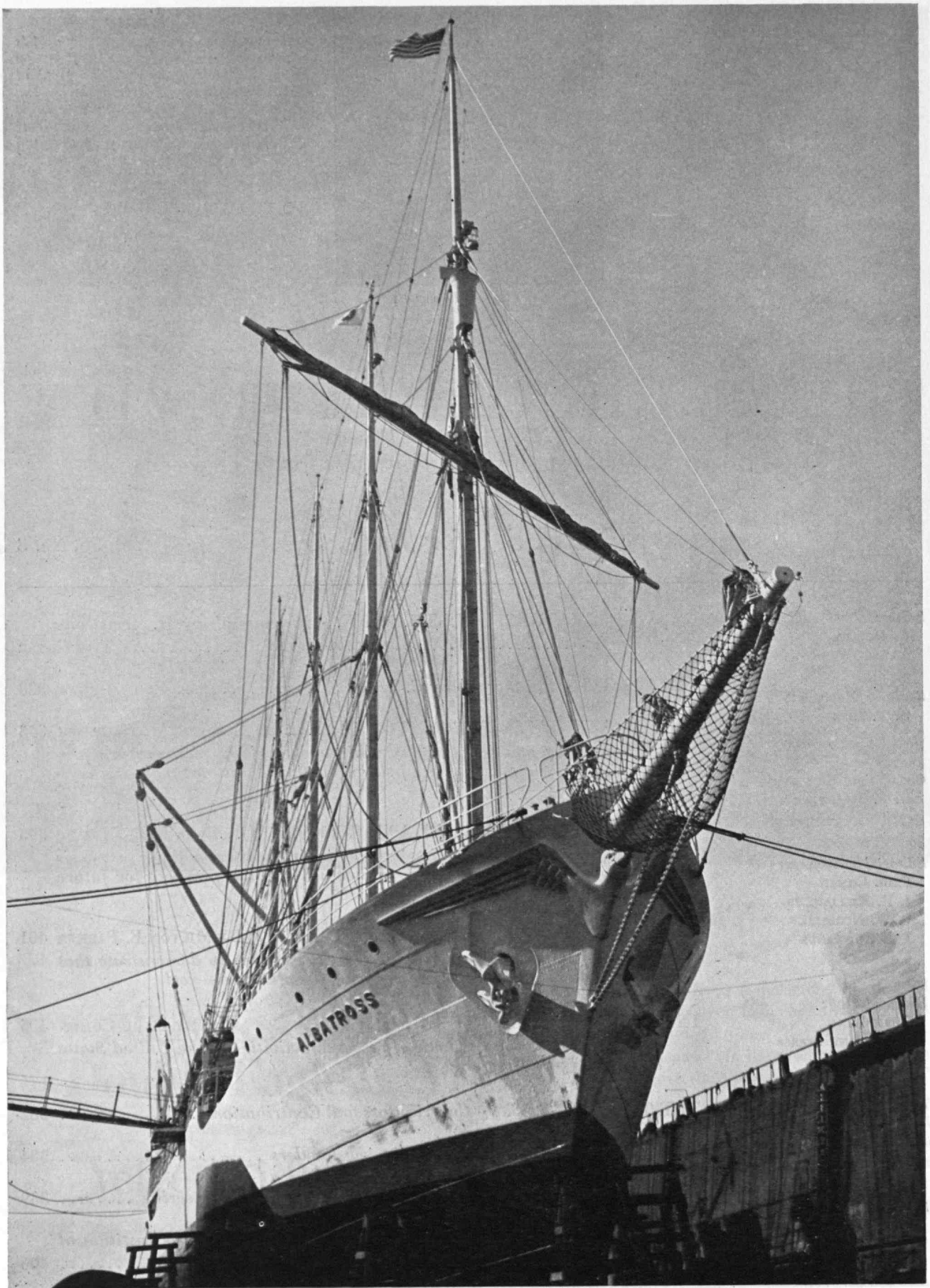


C. E. Patch, '02

Albatross

American merchant sailing vessels, once proudly sweeping the seas for whale oil, may play an important role in feeding the nation's rapidly expanding population.

THE TECHNOLOGY REVIEW

Vol. 56, No. 8 June, 1954

The Trend of Affairs

How High the Sky

A RASH of reports is marking the end of a phase in upper-atmosphere research. With the exhaustion of the supply of *V-2* rockets captured from the Germans at the end of World War II, the sounding of high altitudes with heavy loads of scientific equipment must, for the time being, be conducted with smaller, less expensive rockets and, probably, at a somewhat slower pace.

For decades, scientists have wondered about the nature of the atmosphere above the highest mountains and beyond the reach of airplanes and balloons. Extending no one knows how far into space – perhaps for many thousands of miles – this region of the earth could be probed only by radio beams or by men's minds working from whatever measurements could be made at or near the earth's surface. Incidentally, auroral displays have been measured by triangulation up to heights of 700 miles.

Goddard, in 1919, had proposed that rockets would be ideal vehicles to carry instruments into the upper atmosphere. There, substantially, the idea rested until, during World War II, the Germans developed the huge *V-2*, a 46-foot, multi-ton rocket with a horizontal range in the order of 180 miles. With the collapse of Germany, the rockets not yet expended fell into the hands of the Allies. The share of the United States amounted to about 100 complete rockets and much auxiliary and spare equipment. Literally trainloads of equipment were transported to the White Sands Proving Grounds. Since it was necessary in any case to expend these rockets in order that the military become more familiar with the techniques of designing and handling liquid fuel rockets, it was decided that the war heads might just as well be loaded with scientific apparatus as with dead weight. The invitation in 1946 by the Ordnance Department to various scientific groups to make use of these facilities resulted in the V-2 Upper Atmosphere Panel.

The first *V-2* launched in this country rose from its mount on April 16, 1946, carried a single Geiger counter and, as far as rocket performance was concerned, was a failure. Sixty-six *V-2's* had been launched from White Sands and three elsewhere by October 29, 1951. Two thirds of these vehicles reached altitudes exceeding 50 miles. One two-stage rocket consisting of a *V-2* and a *WAC Corporal* reached the record height of 250 miles. All told, they carried a total of over 20 tons of instruments farther into the sky than scientists had ever penetrated.

The rocket is far from an ideal carrier of equipment. It does not yet go high enough. It stays at, or near, extreme altitude for only a few minutes. And it subjects its load to some dizzying changes in environment, to sharp temperature and pressure variations, high acceleration, heavy vibration, and to a savagely severe impact on returning to earth.

One of the more important fields of exploration aided by rocket firings have been studies of the sun's radiations, particularly in the far ultraviolet. The earth's atmosphere is such an efficient absorber of these wave lengths that little can be learned from measurements at the earth's surface. Servo-driven, sun-following spectographs are among the special devices developed for this field.

Rocket measurements have revealed that the normal energy received by the earth at an altitude far above the bulk of the atmosphere is about 3 per cent higher than hitherto extrapolated from measurements at lower altitude. Wind velocities and air temperatures have been measured directly at hitherto inaccessible levels, although at levels above 35 miles the atmosphere is so rarefied that temperatures do not have their sea-level significance. It will undoubtedly be years before the full significance of the measurements so far accumulated are absorbed into the body of knowledge about the composition of the earth's atmosphere and of the conditions of flight in near vacuums.

Making the Last Drop Good

COFFEE is one of the most popular beverages in the United States. The per capita consumption is approximately 15 pounds and the total consumption is two and one-half billion pounds. If one pound makes 40 cups of beverage, then the annual per capita consumption is 600 cups. However, this figure assumes that every man, woman, and child (including babies) is a coffee drinker. A more realistic figure can be obtained by assuming that the average coffee drinker consumes about two cups per day, or about 750 cups per year. Coffee has gained its eminent position in the household because it tastes good; even before it reaches the mouth, its pleasant fragrant aroma foretells of the satisfaction yet to come.

As a result of much painstaking effort and experience, by and large, manufacturers have created the kinds of coffee most acceptable to consumers. In spite of such effort, the final step of extracting a delectable brown liquid from roasted and ground beans is a crucial one. Although it is not difficult to make a good cup of coffee, lack of knowledge, carelessness, and circumstance often act separately or together to prevent the consumer from receiving the full measure of enjoyment the manufacturer has struggled so diligently to achieve.

Circumstance, for example, certainly plays an important role in the success or failure of coffee making. An essential component of coffee beverage is water. Unfortunately the water we drink and use in the preparation of coffee is not simply H_2O as the chemists would have it, but is a complex solution containing many different chemical compounds. The complexity of the solution varies greatly according to region of origin, the type of storage and treatment it receives, and many other factors. Experience has shown that the New England coffee drinker is fortunate in having available waters which, for the most part, are quite suitable for making good coffee.

A vast knowledge concerning types and composition of water supplies throughout the country has become available over the years, but relatively little is known about the effect of water impurities on the flavor of beverage coffee. Realizing this, the Coffee Brewing Institute, an organization recently established under the auspices of the Pan-American Coffee Bureau and the National Coffee Association, is now collaborating in an investigation of this problem in the Department of Food Technology at M.I.T.

Under the supervision of Ernest E. Lockhart, '34, Associate Professor of Food Chemistry, and his group in the Institute's Food Flavor Laboratories, an extensive study of the chemical composition of waters normal to many typical areas in the United States is in progress. Information derived from this study is being used to ascertain the identity of chemical impurities, to measure (by means of panel techniques) the effective taste thresholds of chemical impurities, and to prepare synthetic waters containing known concentrations of impurities. Eventually, coffee brewed with synthetic waters of known composition will be studied by flavor panel comparison to determine whether any or some of the impurities present can change the flavor of a standardized control beverage.

The results of this research will demonstrate which impurities destroy the flavor of coffee and to what extent such impurities are discernible. It is hoped that this study may also serve as a basis for recommendations for the treatment of water in hotels, restaurants, dining cars, homes, or other places where coffee is prepared, in order to assist in achieving the ultimate objectives of consumer satisfaction, acceptance, and enjoyment.

Animals Versus Man

THE initial emphasis of public health was prevention of the spread, from man to man, of diseases that affect human beings only. Not until later was attention given to control of infections that attack other living things as well as the human being, and are transmissible from animals to man.

These infections, transmissible from animals to man, may be thrown into two broad groups. First are diseases of animals having no utility to human society. Here protection of the human being can focus on destruction of the animal host, or prevention of its contact with mankind. Examples in this category are the insect-borne diseases, such as yellow fever or malaria. The insect host may be destroyed by insecticides, and by elimination of its breeding places. Or contact with the human being can be prevented by screening of buildings, and the use of insect repellents.

The other category of animal diseases transmissible to man are infections of useful domestic animals. Manifestly the solution here cannot be either to destroy the animal host or to prevent its contact with the human being.

A special expert group, charged with consideration of animal diseases transmissible to man, has been organized in the United Nations, under joint auspices of the World Health Organization and the Food and Agriculture Organization. A recent report of this group lists no less than 86 diseases: 29 caused by worm parasites of various types; 20 by bacteria; 20 by viruses; 8 by Protozoa; and the remainder by miscellaneous infectious agents of other sorts. Ten of the 86 infections are deemed to be sufficiently prevalent to warrant intensive study of methods for their control. These major 10 are:

Trichinosis — infection of swine, man, and other animals by a worm parasite that resides as an adult in the intestinal tract, as larvae in body tissues;

Equine virus encephalitis — an infection of the human central nervous system caused by a virus that also attacks horses;

Bilharziasis — infection of blood vessels or skin, by trematode worms;

Hydatidosis — tapeworm infestation;

Leishmaniasis — infection by a protozoan affecting dogs as well as man, and transmitted by flies;

Leptospirosis — a disease causing jaundice in man, produced by a spirochete (similar to the syphilis organism) affecting rats and dogs as well as man;

Psittacosis ("*parrot fever*") — caused by a virus infecting parakeets and other birds and producing pneumonia in the human being;

Q Fever – an infection caused by Rickettsia, microorganisms intermediate in size between viruses and bacteria;

Rabies – the well-known infection of man, dogs, and other mammals, caused by a virus;

Tularemia – a bacterial infection of rabbits and other rodents, transmissible to man directly or via insects.

Of these 10 major animal diseases transmissible to man, trichinosis was characterized as "a national disgrace" in a recent editorial in the *American Journal of Public Health** which included the astounding statement: "Trichinosis is undoubtedly the only communicable disease which is more prevalent in the United States than in any other country of the world."

Human trichinosis in the United States is mainly a result of feeding hogs raw garbage. Hogs so fed are likely to become infected from pork scraps in the garbage; when their meat is consumed without sufficient cooking, it is apt to cause human trichinosis. The role of garbage feeding is demonstrated by statistics of an 11.5 per cent incidence of trichinosis in garbage-fed hogs on the eastern seaboard, whereas trichinosis occurs in only about 0.6 per cent of corn-fed hogs in the Central States.

A national conference on trichinosis was held at the headquarters of the American Medical Association in December, 1952. Reports made then estimate, on the basis of autopsy findings, that some 25,000,000 people in this country are infected with trichinosis. A national disgrace indeed! Although many of these infections are symptomless or "subclinical," approximately 16,000 clinical cases of human trichinosis are estimated to occur in this country every year.

Pork, even heavily infested with trichinae, may be eaten with impunity so long as it is well cooked; for the temperatures of normal cooking reliably kill the parasite. Therefore, thorough cooking of all pork, before consumption by human beings, could completely eliminate trichinosis in man. This objective is not achieved because of the vagaries of domestic cooking equipment, because some people like their pork rare, and because some pork products – such as certain bolognas – are made from raw pork.

Manifestly a surer way to control trichinosis is to eliminate it from the hog population. This could be done by cooking all garbage fed to hogs, thereby destroying trichinae in the garbage. The procedure is an entirely practical one, and is used in some locations. Indeed federal government regulations now require the cooking of all garbage for hog feeding transported across state lines. The United States Department of Agriculture and the United States Public Health Service are encouraging local legislation, to make the cooking of garbage for hog feeding universally mandatory.

The sad story of trichinosis in the United States points up the importance of animal diseases transmissible to man. Since animal diseases are the province of the veterinarian, this professional man now has stepped beside the physician as an essential member of the public health team. Therefore it is heartening to note that today many veterinarians are pursuing graduate degrees in schools of public health.

* 43:1174-1175, No. 9 (September, 1953).

Organic Scintillators

During the first 20 years of this century scintillation counting of alpha particles and protons from nuclear disintegrations was a standard technique. The operator of a spinthariscope sat in a darkened room, peered into a low-power magnifier and recorded tiny flashes of light which were visible when a fluorescent screen of zinc sulfide was struck by an alpha particle or proton. As electrical methods of detecting these particles were developed, the optical method of measurement fell into disuse. After World War II scintillation counting was reinstated as an effective measuring method by substituting an electron multiplier for the eye of the human observer. About the same time, it was found that the photomultiplier was sufficiently sensitive to respond to the very weak scintillations produced by beta and gamma rays in organic compounds such as naphthalene and anthracene, and in transparent inorganic crystals such as sodium iodide containing traces of thallium iodide.

Because the combination of an electron multiplier tube and organic scintillator had an extremely rapid response (approximately 10^{-8} second), nuclear phenomena never before accessible could be studied. As usual when a new field of research opens up, the need for pushing the observational techniques a little further becomes apparent. Consequently the physicists, who were largely responsible for these developments, tested a number of organic compounds for scintillation properties. Two additional compounds, stilbene and terphenyl, were found to be useful but a number of conflicting reports appeared on the relative merits of various compounds.

In order to establish the relative effectiveness of a number of organic scintillators and to determine what features of an organic compound were responsible for its behavior as a scintillator, a project to study promising materials was undertaken by the Department of Chemistry and the Laboratory for Nuclear Science, with financial support by the U. S. Atomic Energy Commission and the Office of Naval Research. The work was carried out by Raymond C. Sangster, '51, A.E.C. predoctoral fellow and later a postdoctoral fellow in Chemistry under the supervision of John W. Irvine, Jr., '39, Associate Professor of Chemistry.

A purification technique was developed which operated on a semicontinuous basis involving differential solution, adsorption, and crystallization. Anthracene was used as a test material in developing the process and all grades of this material from a 95 per cent technical grade to "scintillation grade" could be brought to the same state of purity which was higher than that of the commercial scintillation grade anthracene. Such purified anthracene was used for reference against which other materials were compared under carefully standardized conditions.

Approximately 60 compounds were purified and tested. These compounds were selected as members of several homologous series so the effect of structural changes on the scintillation behavior could be evaluated. Several compounds such as quaterphenyl, 1,2-di-(alpha-naphthyl)-ethylene and carbazole gave substantially larger pulses than stilbene and terphenyl, but no compounds exceeded anthracene.

Geologic Time Measurements

THE continents have reached their present size and form by a series of great mountain-building events, which resulted in lighter masses of rock remaining in gravitational equilibrium high enough above the ocean floors to be exposed above the surface of the water. Thus the continents make a mosaic of areas, each of which was formed during some limited interval of time in the past. A study of the history of the earth and the continents requires that the time and duration of these events be measured, and the events correlated from one continental area to another, in order that the history of the earth's surface may be understood as a unified single progression.

Several methods of measuring the ages of rocks and minerals are being tested in the Department of Geology and Geophysics. All of these are based ultimately on the radioactive decay of some naturally occurring unstable isotope. In the uranium series alone, several ratios of elements or isotopes change progressively throughout time within a closed system, which is generally a single crystal of a mineral containing uranium. Lead 206 increases with respect to uranium 238, lead 207 with respect to uranium 235; and since the two parent elements are isotopes and therefore have a quite constant relative abundance, the lead products have a uniformly changing relationship with respect to each other. Helium also accumulates at a rate proportional to the abundance of the uranium, and may be used in cases where the mineral retains it. For the thorium series lead and helium ratios may also be used. In minerals containing sufficient rubidium the ratio of Sr^{87} to Rb^{87} may be used because the rubidium 87 isotope decays radioactively into strontium 87. Most rocks contain a considerable amount of potassium which generates argon 40 from the decay of the isotope potassium 40.

Mass spectrometers are being used to measure the isotope ratios needed in this work. The Department has an instrument for isotopic analysis of gases, and another instrument recently put into operation for the analysis of solid samples utilizing the emission of ions from a heated filament. Total lead measurements are made by emission spectrography. Gases such as helium and argon are analyzed volumetrically, or by isotope dilution techniques. Uranium and thorium are measured by radiometric techniques.

The patterns of ancient events shown by the results of measurements at M.I.T., and elsewhere, are beginning to resolve the early history of the earth. The ages of different continental areas range from a few million years to about three billion years. No unquestioned measurements have shown any crustal rocks to be older than three billion years, although several areas in different parts of the earth have been close to this figure. Thus it seems probable that this limit sets the approximate time at which continental crustal materials first appeared, or at which the surface was stable enough to permit these masses of material to persist at the surface. Subsequent events show the small continental nuclei growing in size by a series of mountain belts added to the periphery of the existing areas. These belts are now eroded to near sea level, with only their roots left.

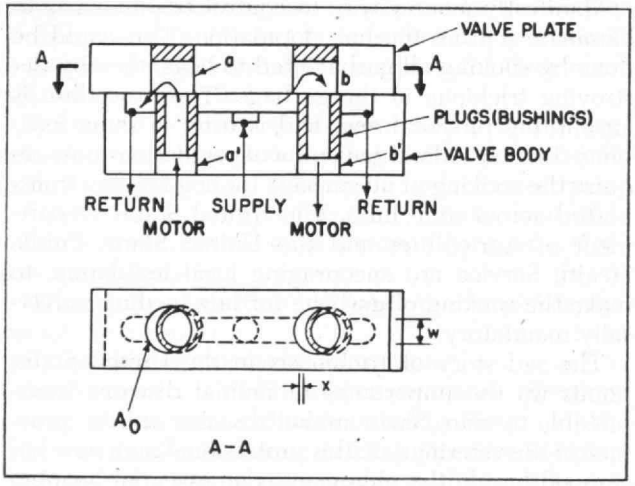
One part of the work of considerable interest involves the measurement of the slowly changing ratio of the strontium isotopes throughout time in the oceans owing to the continuous addition of strontium 87 fed by the breakdown of rubidium 87 in continental rocks. This changing ratio is being measured in samples of marine sediments of different ages. The variation of the ratios of low-mass stable isotopes is also of interest in the study of the history of the chemical elements after they have reached the earth.

Precision Valves

MUCH of the difficulty of making precision control valves for hydraulic or pneumatic systems arises from the difficulty of machining the piston or spool-type valves which are commonly employed. A valve configuration to simplify construction and reduce manufacturing cost of precision control valves has been developed by Shih Y. Lee, '43, Assistant Professor of Mechanical Engineering in the Institute's Dynamic Analysis and Control Laboratory.

A schematic diagram of the new valve design is shown in the diagram below. The valve plate and body are initially rigidly clamped together, and holes *a-a'* and *b-b'* are drilled, bored, and finish-lapped before the two parts are unclamped, thus assuring proper orientation of the metering edges of the valve. Holes *a* and *b* at the top of the valve plate are plugged up. A groove of width, *w*, is milled in the body and bushings pressed into holes of *a'* and *b'*, are finished flush with upper surface. The edges of these bushings exposed by the longitudinal groove and the corresponding portion of the upper holes form the metering orifices of the valve.

When the valve plate is displaced longitudinally two orifices are opened, each of which is bounded by two equal circular arcs and two straight lines, to form curved "parallelograms." The areas of the two are equal and independent of the diameters of holes *a* and *b* so long as their diameter is greater than *w*. If width *w* is constant, the areas of the orifices are proportional to the displacement.



Design for precision valve provides for accurate control of flow in hydraulic or pneumatic systems. Manufacturing operations are simplified and costs are greatly reduced by the new design in which flow is controlled by sliding the valve plate relative to valve body.

Tired Nature's Sweet Restorer

The Basic Mechanisms of Sleep Are Not Thoroughly Understood, Although the Emotional and Psychic Effects of Sleeplessness Are Profound

By FREDERIC W. NORDSIEK

"It is no small art to sleep," wrote Nietzsche, "to achieve it one must keep awake all day." This paradox is firmly inherent in contemporary life. Thus modern superhighways lull some drivers into slumber; witness news accounts of accidents on any major turnpike. Yet the same people who doze off behind the wheels of their cars may need to resort to sleeping pills at bedtime. In short, today's dilemma may be: Benzedrine to keep awake and barbiturates to go to sleep.

To view this dilemma in full perspective we need to know: What is sleep? Is sleep really necessary? What determines when we sleep and when we wake? What aids are available to promote sleep or to promote wakefulness?

The *Iliad*, written down in the Eighth or Seventh Century before the Christian era, calls sleep "the twin of death." This metaphor, though ancient, reflects remarkably well modern physiological knowledge of sleep. For example, after about four hours of continuous slumber, the metabolism of the human being falls off to less than 0.25 calorie per minute; this is the metabolic rate of a dying person. During sleep the systolic blood pressure decreases to less than 100 millimeters of mercury. Speed of circulation of the blood, pulse rate, secretion of digestive juices in the stomach all slow down. Breathing is shallower; volume of air inspired is halved. There is a general depression of tissue and organ activity, and a diminution of muscle tone. The output of urine decreases but that of perspiration increases. Most significant of all — as will be shown presently — there is a pronounced drop in body temperature during slumber. This is about all that is known concerning sleep. Its salient feature, unconsciousness, is little understood at present.

Obviously people must stay awake for some hours at least out of the 24; for it is through physical and mental activity during times of wakefulness that the food, clothing, and shelter from the elements necessary for survival usually are gained. How about staying awake all of the time? But everyone knows that sleeplessness leaves the human being mentally, emotionally, and physically debilitated. Indeed personality effects of extended sleeplessness observed in soldiers have been recorded as irritability, loss of memory, inattention, apathy, foolish garrulity, and irrelevant laughter. The mental disorganization caused by prolonged sleeplessness may verge on temporary insanity.

Objective measurements have been made of the effect of sleeplessness on intellectual capacity. Subjects lacking sleep made lower scores on intelligence tests than normally; and they were found by accurate energy output measurements to expend excess physical work in doing a given intellectual task. Research has shown that reaction speed, muscular steadiness, and accuracy in mental tasks (such as computation) all suffer with sleeplessness. Persons accustomed to about eight hours of sleep were found to regain normal reaction speed and muscular steadiness after about four hours of continuous slumber; but they required at least six hours of sleep to restore normal accuracy in mental tasks.

Thus the emotional and psychic effects of sleeplessness are profound. But if sleeplessness be extended, grave physical effects follow. This fact is known through experiments with animals, where continued deprivation of sleep ultimately kills. Thus young dogs, prevented from sleeping, died in less than a week. Yet animals of the same species and age, allowed to sleep at will, survived for over a month without food. Edna St. Vincent Millay reflected the general misconception of this relationship when she wrote "eat I must and sleep I will." Sleep we *must*, and for maximal well-being we need to spend about a third of our lives asleep.

Day and Night

The human being in general is a diurnal animal, meaning that he is active during the day and sleeps at night. This custom arises from the practicality of using daylight, rather than artificial light, for work. But, since "some must watch while some must sleep," policemen, transportation workers, restaurant employees, and others may find it necessary to reverse the usual pattern and sleep daytimes.

Of primary importance is the ratio of time asleep to time awake, irrespective of the length of each sleep period or when, by the clock, it occurs. In terms of the 24-hour cycle imposed upon us by the earth's rotation, most human beings need to sleep about eight hours in 24. That the 24-hour cycle is not mandatory, however, was shown by Nathaniel Kleitman and Bruce Richardson, physiologists of the University of Chicago, when they lived for some time in the Mammoth Cave in Kentucky. They chose this site for sleep studies, using themselves as subjects, because daylight, temperature fluctuations, and

other environmental variations related to the 24-solar day are excluded from the cave. They observed sleep and wakefulness, and related physiological phenomena, in 21-hour "days," using artificial lighting to simulate the illumination of a sun swinging through a 21-hour cycle. (In such 21-hour days, the sleep pattern becomes seven hours of slumber, 14 hours of wakefulness.) They also studied lengthened days of 28 hours.

Richardson readily adapted to either shortened or lengthened cycles, sleeping well during the "nights" and being energetic during the "days." Kleitman, contrariwise, could not adjust easily. He continued for some time to feel sleepy or alert according to the usual 24-hour cycle, not according to the artificial cycle in effect at the moment.

Hot and Cold

Kleitman and Richardson discovered that their relative adaptability to the sleep patterns of days of various lengths stemmed from their respective ease in changing their body temperature cycles. It has already been remarked that the human temperature falls during sleep. This statement may have surprised readers who, aware that the graduations on all clinical thermometers change from black to red at 98.6 degrees F., have thought of the normal human body temperature as a fixed quantity. The temperature of the healthy human being actually varies within a range of a degree or two, in well-defined cycles. Thus one cycle, in mature women, is a lunar month in length and is related to ovulation. But human beings of both sexes have a marked daily body temperature fluctuation, following a regular, fairly smooth, wavelike curve of a sinusoidal type. The highest temperature occurs about the middle of the hours of waking; the lowest about the middle of the hours of slumber. Note that sleeping habits, not the solar day, determine this relationship. In people who sleep at night, the minimum body temperature occurs during the wee small hours. In those who sleep during the day, the lowest temperature occurs then. Therefore, the temperature cycle of each individual is clearly an artifact, a product of habit; not the result of direct environmental influences of the solar day.

If adult human beings stay awake for several days on end, their daily temperature fluctuation continues; and they usually feel sleepiest when the body temperature is at its minimum, about the middle of their normal sleeping time.

On the basis of what has been told about the temperature cycle, it will not surprise the reader to learn that it can be reversed, shifted, lengthened, or shortened. But individuals differ widely in the ease and speed with which they can make such changes – just as most human characteristics show a wide range of variability. Thus, during the Mammoth Cave sleep studies, Richardson readily shortened or lengthened his temperature cycle to correspond to the experimental 21-hour or 28-hour days. Kleitman, in contrast, was much slower to change the length of his temperature cycle. Therefore, whether the day was lengthened or shortened, he experienced, at first, occasions when his minimum body temperature occurred during hours when he was required to stay awake; and he felt miserable accordingly.

Shifts in the body temperature cycle result when people move from one time zone to another. Crossing the ocean by steamer allows gradual adaptation to the changing time; but individuals who travel from Europe to America by airplane abruptly find their body temperature cycle five hours "out of phase" with the sleep pattern required by the local solar day. The necessary adjustment takes a few days, and again is easier for some than for others, depending upon the adaptability of the individual.

Workers who have alternating stretches of day and night duty – such as some policemen – have to reverse their temperature cycle every time they change their work schedule. Such a complete reversal may take a week or more.

And So to Bed

Although Mark Twain advised against going to bed "because so many people die there," reclining in a dark, quiet room, on a comfortable bed with covering suited to the season, unquestionably promotes sustained slumber. The reference to darkness and quiet points up a prime requisite for sleep; absence of stimulation. Slumber of a sort is possible in a Pullman berth with all of the senses continually assailed; but such sleep is fitful at best.

Mental and physical relaxation, a static position, darkness, quiet, absence of pronounced odors, a comfortable temperature (perhaps achieved through air conditioning in the summer), a comfortable bed (according to individual preference) – all of these aid sleep. Beyond a few such basic facts lies a vast and ambiguous folklore concerning how to sleep well. Thus opinions differ broadly on how to accomplish the necessary mental and physical relaxation; as to the relative virtues of soft versus hard beds; whether a pillow should be used and its optimal thickness and resiliency; whether warm baths help; whether eating or drinking at bedtime should be practiced or shunned, and so forth. Children may find sleep impossible unless they are kissed and tucked in, or unless they take a particular favorite toy to bed. Books could be written (indeed have been) about this great twilight land of mingled fact and fantasy concerning aids to sleep.

One solid area of scientific fact concerning aids to sleep and wakefulness is the pharmacology of the drugs that promote either condition. All of these are classified as drugs that affect the central nervous system. Those that promote wakefulness are called stimulants: those that promote sleep are included among the central nervous system depressants.

The depressants are classified in various ways. One classification divides these drugs into four groups: general anesthetics (such as ether), intoxicants (such as alcohol), antispasmodics (such as belladonna), and hypnotics – the drugs that promote sleep. A five-part classification of central nervous system depressants is: sedatives, pain-relieving agents, cough-relieving agents, ego-depressing substances (used in narcoanalysis), and hypnotics. But all of the depressant

(*Continued on page 420*)

The Future of Discovery and Invention

With its Emphasis on Application and Group Effort

Rather than on Basic Discovery and Individualism

Science will Play a Leading Role in Invention

By J. L. B. BLIZARD

At present colleges graduate each year as many engineers* as formed the entire profession in 1900.[1] Since the turn of the century the engineering profession in the United States has increased from only 40,000 to more than 400,000 members, and research expenditures have skyrocketed. It might be expected that the patents issued per year would have increased during this period. But United States Patent Office statistics[2] show that the patent rate has not continued to increase, nor has it even remained constant. Discounting short-term fluctuations, the patent rate has been decreasing for the last 20 years. (See Figs. 1 and 2.) The decline in patenting appears to be international in scope – patent trends in England, France, Germany, Canada, and Japan have been similar to those in the United States.[3]

What is really of interest is the number of inventions, which is not necessarily indicated by the number of patents. Changes in patent policy, formation of patent pools, and growth of monopoly would presumably affect the proportion of inventions that are patented. Yet the international aspect of the decline suggests that a more fundamental change is taking place, which involves invention itself, and not just patenting.

Stafford[3] recently made a study of more than 1,100,000 U.S. patents to determine trends in the last few decades. From this study it became apparent that not only had the patent volume declined, but that the patent classification system had almost completed its growth:

"The development of the classification system for patented invention since 1838 indicates that the number of main classes in invention increased at approximately an exponential rate during the Nineteenth and early Twentieth Centuries. From 22 main classes in 1836 the classification system increased to 290 in 1919. Only 11 main classes were added between 1919 and 1947.

* Please see numbered references at end of article, page 422.

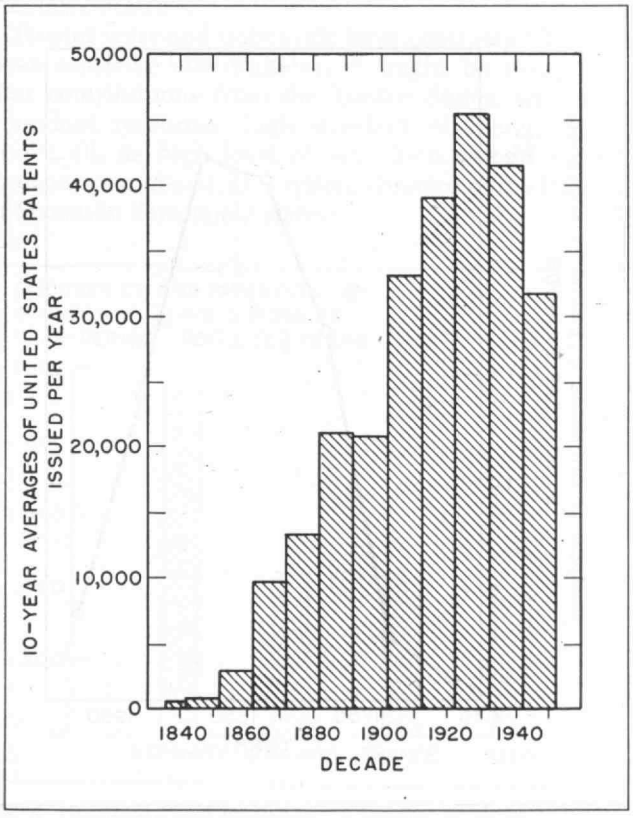


Fig. 1. United States patents; 10-year averages. Source: Statistical Abstract of the United States, *1952, pages 456–458.*

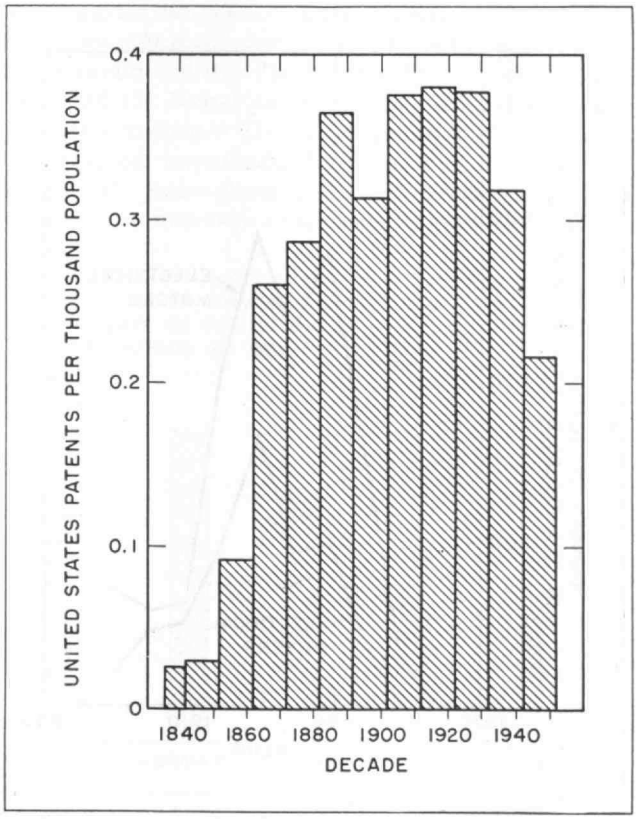


Fig. 2. Patents issued per year per capita. Source: Statistical Abstract of the United States, *1952; census data, page 4.*

"About 1870 the increasing complexity of invention within the main classes required their sub-division into sub-classes. Between 1870 and 1924 these sub-classes increased at an exponential rate to a total of 30,000. Since 1924 the total has increased at a slower rate to 43,500 . . .

"These trends within the classification system indicate that the numbers of categories required to classify material culture are increasing at decreasing rates, the growth of main classes or large cultural complexes having almost stopped. The broad outlines of technology may now be at hand, with only a vast amount of improving innovation to be supplied in the future."

Stafford noted further that the decline in patents had been greatest in the fields of mechanics and the practical arts – areas which had been exploited the longest. Least affected had been the yield of patents from new developments in chemistry and physics.

In any given field, discoveries or inventions usually follow a cycle of growth and decline (Figs. 3 and 4) which, on the average, resembles a bell-shaped curve. The cycle begins with a group of important fundamental discoveries or inventions, after which numerous additions, improvements, and refinements are made.

Thus, even more significant than trends in the total number of inventions would be the trend in fundamental inventions. Some time ago the editors of *Scientific American* estimated the number of fundamental inventions made in various decades in the United States (Table 1).[4]

The world-wide growth of technology (including science) has been traced by Darmstaedter.[5, 6] With the co-operation of 26 specialists, he has charted the distribution of important discoveries and inventions in different periods and in different countries. (Fig. 5). It appears that the exponential growth of the Eighteenth and Nineteenth Centuries is leveling off, and possibly even declining.

Table 1

Estimate of the Number of Fundamental Inventions in the United States from 1846-1915. Source: *Scientific American*, **CXXIII**: 323-325.

Period	*Fundamental Inventions*
1846-1855	25
1856-1865	24
1866-1875	20
1876-1885	16
1886-1895	13
1896-1905	15
1906-1915	10

Sorokin, the sociologist, correlates as follows the respective growths of science and technology:

Technological progress (as measured by the numerical increase of inventions) has been more rapid for the last two centuries than scientific advances. Indeed the number of important discoveries in the sciences increased from 111 in 1701-1725 to 1,617 in 1876-1900, that is, about 15 times; the number of inventions for these two periods respectively was 47 and 1,223, representing an increase of about 26 times. The number of significant scientific discoveries in 1876-1900 was about 2.3 times as great as in 1801-1825; the number of technological inventions,

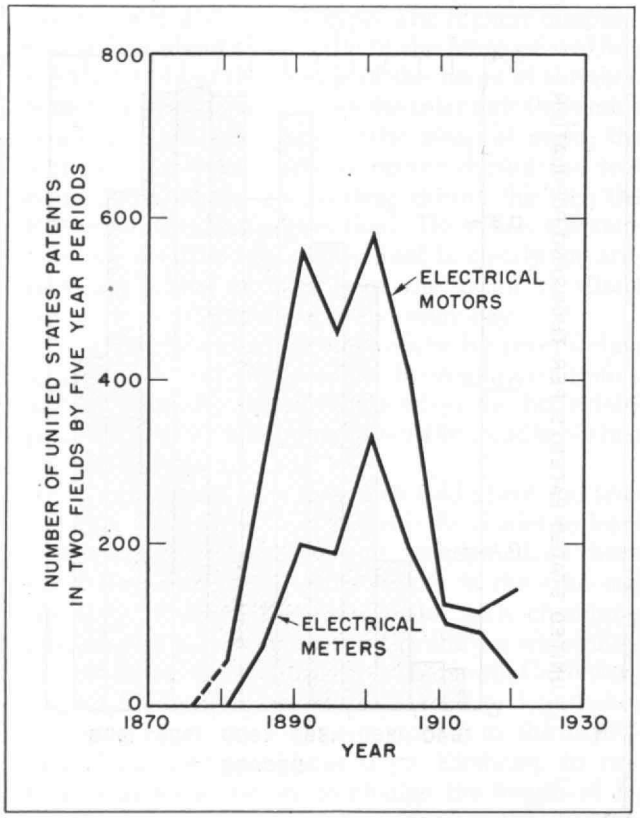


Fig. 3. Patents issued, by five-year periods, 1879-1923. Source: Kuznets' Secular Movements in Production and Prices.

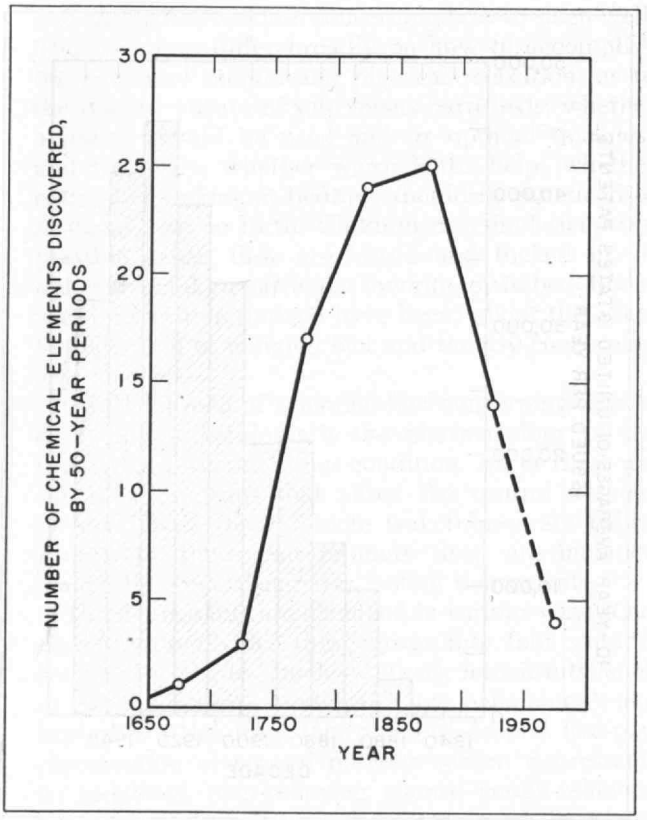


Fig. 4. Discovery of the chemical elements, by 50-year periods. Source: World Book Encyclopedia.

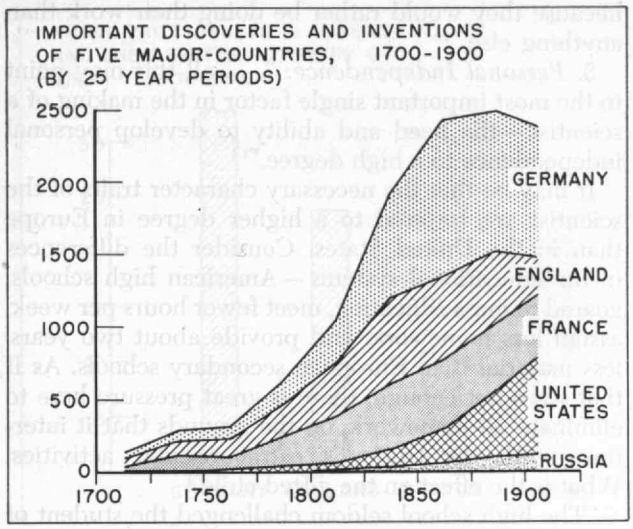


Fig. 5. Important discoveries and inventions of five major countries, 1700–1900, by 25-year periods. Data for 1900–1908 has been normalized to a 25-year period, and is shown as dashed lines. Source: Sorokin's Social and Cultural Dynamics, *Volume 2, page 165.*

however, was about 3.2 times as great in the latter period. Hence, if in the Twentieth Century there is a slackening in the numerical increase of inventions, it is highly probable that this slackening is as pronounced or perhaps even more marked in the natural sciences.[6]

Having glimpsed the historical development of technology, it would be interesting to speculate upon the future. Stafford's analysis of patent trends indicates that fundamental inventions will arise increasingly from the sciences. The future rate of development of technology can thus be approximated by a study of the growth of present day science in leading countries.

Recent wars and upheavals have contracted European scientific contributions. It might be expected that contributions from the United States, with its abundant resources, high standard of living, and, above all, its high level of education, would more than compensate. M. H. Trytten, Director of the Office of Scientific Personnel,[7] states:

At the close of World War II everyone agreed that the United States, whose contributions in the past had been mainly in the field of technology, should turn to much more emphasis on basic research. In Europe, which had been the major source of the world's great scientific progress during the past two centuries, the scientific enterprise had been all but destroyed and work had almost stopped. Without further progress in scientific discovery, technology would soon reach a dead end. It was obvious to the nation's leaders, including those in government, that the United States must take the leadership and shoulder the responsibility for the march of fundamental discovery. Programs for the expansion of basic scientific work in the United States were laid down in several official reports.

In spite of all this the trend since the war has gone in the opposite direction: the emphasis has actually shifted more and more to applied science rather than basic science. An increasing share of the nation's research funds has been spent in engineering and development work. And with the funds have gone the scientists. An even larger proportion of them have been drawn into programs that are mainly applied research, if indeed they can be called research at all. In fact, many of our most productive scientists have abandoned research altogether and become administrators or policy makers.

Nine tenths of the research money spent in the United States in 1947 (excluding atomic energy) went for applied science,[8] and the proportion has since become more and more exaggerated. The trend holds true even for educational institutions, which have long been the stronghold for pure science. From 1951 to 1952, the basic research funds in colleges decreased by nearly $4,000,000 while their applied research funds increased by $30,000,000.[9]

How abundant were American contributions to basic science before the conversion to applied science? For an objective comparison of basic science in various countries two sources will be cited: (1) Thorner's[10] list of important discoveries and inventions by country of origin for the 25-year period with mid-point 1900, and (2) Nobel prizes in the physical sciences from 1901 to 1953.[11] The Nobel prizes in the sciences are awarded impartially for important discoveries, theoretical pronouncements, and occasionally for scientific inventions (for example, to Marconi in 1909

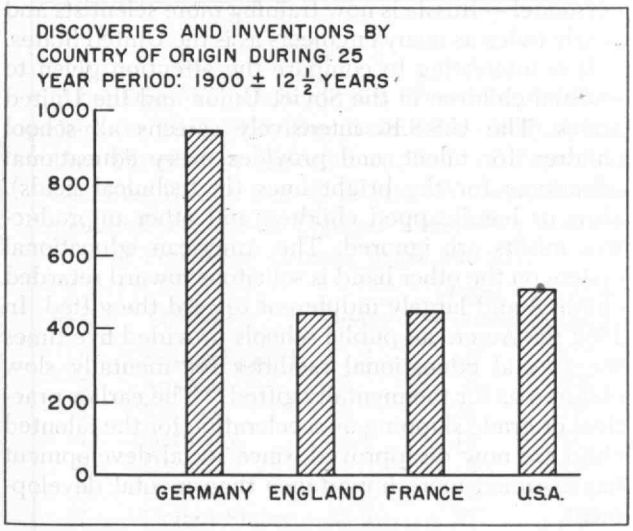


Fig. 6. Discoveries and inventions by country of origin during 25-year period, with mid-point 1900. Source: Thorner, American Journal of Sociology, ***LVIII:25.***

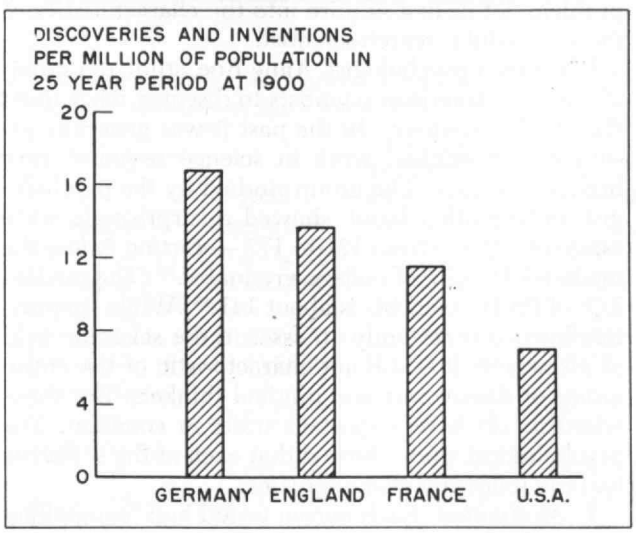


Fig. 7. Discoveries and inventions per million of population in 25-year period at 1900. Source: Thorner, American Journal of Sociology, ***LVIII:25.***

for wireless). Since 1901 when the first awards were given, there have been 115 prize winners in physics and chemistry. Such a number can provide an indication of recent scientific activity in various countries. (See Figs. 6, 7, 8, 9.)

The nation most prominently represented among the Nobel science winners has been Germany, with England second, and the United States third. But it must be remembered that the 1925 population of the United States totaled more than England and Germany combined. Per capita the United States ranks seventh in prize winners (Fig. 9 and Tables 2 and 3), even if physiology prize winners are included. (Physiology is a strong field in American research.)

Even more surprising, the United States is still outranked by European nations having far smaller proportions of college students. Compare England and the United States. The enrollment of the 16 English and Scottish universities in 1930 was 0.11 per cent of the population of England, Scotland, and Wales.[12] In the same year the 900-odd American four-year colleges and universities had enrollments totaling 0.90 per cent of the population of the United States.[13] Per college graduate (at 1930 rates) England thus leads the United States some 15 to 1 in Nobel prize recipients. Of course, the average American college education is not necessarily the equivalent of the average British university education. Yet the United States has produced a high proportion of scientists. Since 1910, nearly every year more than half of the Ph.D.'s granted in the United States have been in the field of science.[14]

Thus despite the high level of education in the United States (see Table 4),[15] fewer discoveries and inventions have resulted, relative to the size of the population, than in many European countries.

What accounts for the divergence between European and American scientific productivity? The distribution of intelligence in these countries is not significantly different, and the proportion of talented people who complete college is far higher in the United Stated than in any cited European country. Factors other than intelligence and education must be particularly influential. In order to understand this problem, let us first inquire into the characteristics of the successful research scientist.

Recently a psychologist, Anne Roe, studied a group of eminent American scientists to discover what traits they had in common. In the past it was generally assumed that original work in science required very high intelligence. The group studied by the psychologist, on the other hand, showed a surprisingly wide range of I.Q.'s – from 121 to 177 – starting *below* the median I.Q., 123, of college graduates.[16] (The median I.Q. of Ph.D. scientists is about 141.[16]) While "genius" intelligence is certainly an asset in the scientific field as elsewhere, it is still not characteristic of the entire group of discoverers and original thinkers. But these scientists do have important traits in common. The psychological study showed that each of the scientists had the following characteristics:

1. *Motivation:* Each person tested had "compelling reasons for becoming a scientist."[16]

2. *Hard Work:* "They have worked long hours for many years, frequently with no vacations to speak of, because they would rather be doing their work than anything else."[16]

3. *Personal Independence:* ". . . all this may point to the most important single factor in the making of a scientist – the need and ability to develop personal independence to a high degree."[16]

It may be that the necessary character traits of the scientist are fostered to a higher degree in Europe than in the United States. Consider the differences in the educational systems – American high schools, geared to mass education, meet fewer hours per week, assign less homework, and provide about two years' less material than European secondary schools. As if that were not enough, there is great pressure here to eliminate all homework, on the grounds that it interferes with the student's extracurricular activities. What is the effect on the gifted child?

"The high school seldom challenged the student of first-rate ability to work up to the level of his intellectual powers . . . The result was that many a brilliant mind developed habits of laziness, carelessness, and superficiality. These habits, becoming firmly established during adolescence, prevented the full development of powers. Even the conscientious student of superior ability did not often find himself seriously involved in a great intellectual enterprise. Seldom was any student 'set on fire' intellectually, eager to explore on his own, ready to conquer difficulties and go through whatever drudgery might be necessary to achieve his purpose. The individual and society were both losers."[17]

The author is reminded of a brilliant scientist who might have left school at 15. The high school work was too slow and dull for him, and his average was D. But one lone teacher recognized his potentialities and encouraged him to prepare for college. After graduating from college he completed a Ph.D. in physics and went on to become codiscoverer of a new subatomic particle. Dr. Roe was amazed to find that many members of her eminent group had become scientists quite by accident. With the present shortage of scientists and engineers, such haphazard development of talent is unrealistic. One of the most crucial factors in the cold war has become the recruitment of technical personnel – Russia is now training more scientists and nearly twice as many engineers as is the United States.

It is interesting to compare the attention given to unusual children in the Soviet Union and the United States. The U.S.S.R. intensively screens all school children for talent, and provides every educational advantage for the bright ones (in technical fields). Slow or handicapped children and other unproductive misfits are ignored. The American educational system on the other hand is solicitous toward retarded children and largely indifferent toward the gifted. In 1952 the American public schools provided five times the special educational facilities for mentally slow children as for the mentally gifted.[18] The earlier practices of grade skipping or acceleration for the talented child are now disapproved, since social development has assumed more importance than mental development.

What about personal independence, which was rated as the most important trait of the scientist? Subtle changes have come about in the United States.

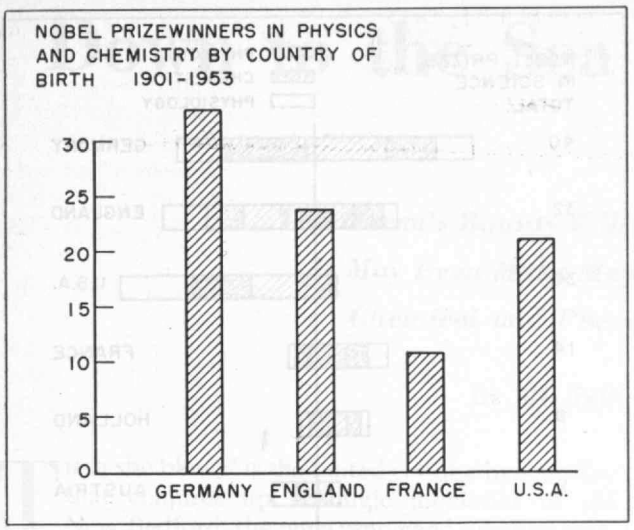


Fig. 8. Nobel prize winners by country of birth; physics and chemistry, 1901–1953. Source: World Almanac, *1953, pages 593–594.*

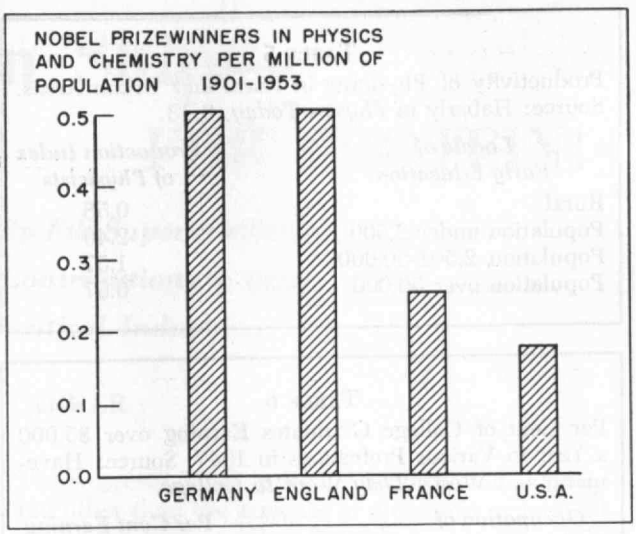


Fig. 9. Nobel prize winners per million of population; physics and chemistry, 1901–1953. Population as of 1925. Source: World Almanac, *1953, pages 593–594.*

As one manifestation, traditional rugged individualism is being shelved in favor of a new virtue, "integration within the group." It is now stressed that the individual's interactions with the group are of greater importance than his intrinsic talents or abilities. Indoctrination on this score has been going on for some time under the banner of progressive education. Group activities have largely supplanted individual endeavors in early training.

The trend away from individuality may have considerable effect on scientific productivity. The psychologists[19] describe the change as follows: Western civilization since the Renaissance has been in a stage of continuous expansion in population, means of production, colonization, exploration, and the like. Such a society appears to be dominated by an *inner-directed* personality. The individual is encouraged to develop his latent abilities and to go into the world to seek his fortune. In the presently developing phase of population stability, a new type of individual becomes predominant – the *other-directed* personality. His psychological motivation is less for individual achievement and more for the approval of the group.

TABLE 2

Nobel Prize Winners in Physics, Chemistry, and Physiology for 1901-1926. Population Base: 1900. Quotas Give Distribution Expected on Basis of Population. Countries Having 5 or More Prize Winners Included. Source of Population Figures: Kuczynski's *Measurement of Population Growth,* pages 230-231.

Rank	*Country*	*Quota*	*Prize Winners*	*Per Cent of Quota*
1	Holland	1.6	7	437
2	Sweden	1.5	5	353
3	Denmark	1.2	4	333
4	Switzerland	1.0	3	300
5	Austria	1.8	3	167
6	Germany	15.4	23	150
7	England	11.7	11	94
8	France	12.3	10	81
9	United States	23	3	13

TABLE 3

Nobel Prize Winners in Physics, Chemistry, and Physiology for 1927-1953. Population base: 1925. Quotas Give Distribution Expected on Basis of Population. Countries Having 5 or More Prize Winners Included. Source of Population Figures: Kuczynski's *Measurement of Population Growth,* pages 230-231.

Rank	*Country*	*Quota*	*Prize Winners*	*Per Cent of Quota*
1	Switzerland	1.2	5	417
2	Austria	2	6	300
3	England	13	21	160
4	Germany	18.8	19	101
5	Denmark	1	1	100
6	Holland	2.2	2	91
7	United States	33.6	27	80
8	Sweden	1.8	1	56
9	France	12	4	33

TABLE 4

Higher Education in Various Countries. Source: *Statistical Yearbook of the United Nations,* 1952.

Country	*1952 Population*	*Students in Higher Educational Institutions in 1952*	*Per Cent*
U.S.A.	150,697,361	2,659,021	1.76
Canada	14,009,000	69,022	0.49
England Wales	44,020,000	103,081	0.23
France	41,944,000	138,000	0.33
West Germany	47,674,000	109,604	0.23
Switzerland	4,690,000	16,501	0.35
Sweden	7,017,000	16,906	0.24
Netherlands	10,114,000	28,250	0.28
Italy	46,280,000	146,485	0.32

Table 5

Productivity of Physicists in Rural and Urban Areas. Source: Haberly in *Physics Today*, 6:13.

Locale of Early Education	*Production Index of Physicists*
Rural	0.58
Population under 2,500	2.40
Population 2,501-50,000	1.57
Population over 50,000	0.97

Table 6

Per Cent of College Graduates Earning over $5,000 a Year in Various Professions in 1947. Source: Havemann and West's *They Went to College.*

Occupation of College Graduates	*Per Cent Earning over $5,000 a Year*
Business Administration	82
Medicine	71
Law	63
Dentistry	63
Engineering	52
Government Service	38
Science	26
Education	19

Statistically, the other-directed personality predominates in cities and suburban areas, where success depends largely upon interaction with people. The inner-directed personality is found mainly in semi-rural areas, where the principal struggle is with the physical, rather than the human, environment.

Could such a change in attitude affect the proportion of people who might become successful scientists? A recent study of the origins of more than 700 physicists discloses that two and a half times the proportion of physicists per capita were born and raised in small towns as in large cities (Table 5).

In the apt terms of psychologist Riesman, the inner-directed person is equipped with a psychological gyroscope, which is set spinning with the proper speed and direction early in life, and which is relatively insensitive to the buffetings of environment. By contrast, the other-directed person has a delicately tuned radar, by which he receives signals from the fluctuating authorities of his environment. Thus, while the inner-directed person is capable of pursuing a long-term objective (research) the sensitive other-directed person is often too involved with his human adaptation to consider more than immediate goals. And while an earlier rural-bred generation of Americans showed a spirit of venture and initiative in vocational pursuits, the high school or college graduate of today wants to play it safe by finding a niche in a large, established corporation.

Studies have been made of the collegiate training of successful scientists and engineers. In the case of the scientists, a search was made of the undergraduate origins of the doctors of natural science listed in *American Men of Science.*[20] Amazingly enough, the highest proportion of scientists come from institutions in the agrarian Midwest, followed by the Far West, East, and South, in that order. In the case of the engineers, the college backgrounds of men listed in *Who's Who in Engineering* were ascertained.[21] (As an interesting aside, M.I.T. leads all other technical schools, not only in total number of listings, but in the percentage of alumni listed.) Of the 50 institutions with the largest number of listed alumni, 22 are in the East, 21 in the Midwest, and only 4 and 3 in the Far West and South, respectively.

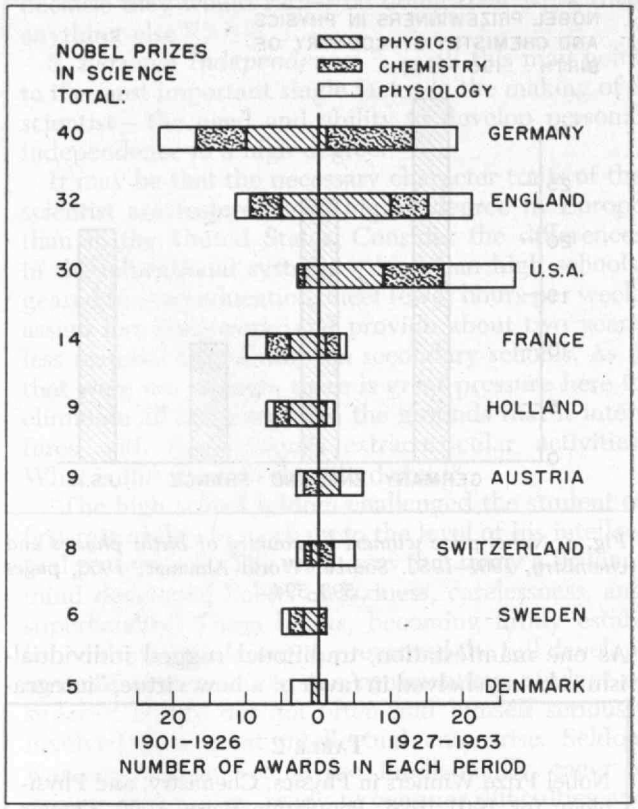


Fig. 10. Nobel prize winners in physics, chemistry, and physiology during 1901–1926, and 1927–1953. Source: World Almanac, *1953, pages 593–594.*

The group which analyzed the origins of scientists states:

"Our evidence indicates that high-cost institutions [universities] attract a relatively wealthy clientele who seldom pursue the economically unrewarding vocation of professional science . . .

"One may further note that among the first 50 [colleges which produce scientists] there is a great preponderance from the Middle West and Far West. No Southern institutions appear here, and only eight in the New England and Middle Atlantic States . . .

"In the production of graduates entering some other professions, such as the law, the ranking is quite different. According to a survey made before World War II, the United States Northeast is the region most productive of future lawyers; of the 35 undergraduate institutions that lead in this respect nearly two thirds were in New England, New York, and Pennsylvania [these states average 76 per cent urban[22]] . . .

"It is interesting to note in passing that those industrialized regions which offer the greatest vocational future to scientists are not the most productive, whereas the semiagrarian regions of the Middle and Far West produce most abundantly."[20]

(*Continued on page 421*)

Down to the Sea in Ships— FOR PROTEIN!

The Ocean's Bounty Will Help Fill Supermarkets— It May Even Make Major Contributions to Our Chemical and Pharmaceutical Industries

By MILTON E. PARKER

"THAR she blows" is the muted cry of a bygone day that conjures up nostalgic memories of old New Bedford, the once renowned whaling port. "A dead whale or a stove boat" was the battle cry that urged her sons on to feats of raw courage when locked in mortal combat with an enraged denizen of the deep. In time, the development of mineral oil for illuminating and lubricating purposes presaged the passing of that glamourous calling which had urged many a daring youth on to a career as harpooner. No cowboy seeking to tame a bucking bronco ever experienced the gyrations and goose flesh that thrilled those hardy men of the sea who rode the waves in the bow of a whaleboat, with weapon sunk deep in the flesh of frenzied prey.

The passing of whaling as the leading industry of New Bedford and San Francisco was surplanted with the onset of more lucrative landlubber pursuits, as our history books reveal. Still "dat ole davil, sea" beckons men. But it now appears that instead of providing illuminating oil, the bounty of the ocean will help fill the larders of our supermarkets and perhaps even make major contributions to our chemical and pharmaceutical stocks. For while the glamour of a former day has passed into the limbo of forgotten professions as eulogized in the works of a Herman Melville, there are evidences that once again our mariners will be called upon to help supply an important segment of the nation's sustenance. And where in the earlier days they went down to the sea for the oil of industry, they now will seek the protein of nutrition!

To many a reader, the suggestion that men will go down to the sea for such a prosaic thing as protein might appear almost sacrilegious to the revered memories of our sturdy mariners of yesteryear. Yet such a mission, commonplace as it may appear by contrast, is probably destined to be even more fateful to our national survival than the whale oil that filled an urgent need of an earlier day in the life of our country. For in the mounting pressure of population — not yet too apparent in the face of certain agricultural surpluses — sea foods are bound to play an ever increasing role (possibly even one of vital significance as one of our most important national food resources). Therefore, while such a role may never seem inspiring in the making of contemporary history, it may become the object of marvel and adoration to future generations — just as past history with its thrilling exploits of the sea are so cherished by us today!

The suggestion that protein — food protein — is anything other than the concern of a chemist or technologist might seem odd at first blush. Actually, food proteins truly occupy a tremendously vital significance in national and world affairs — much more so than is usually realized. A list of the basic materials any individual customarily considers essential for his own comfort, as well as that of his family, will indicate the importance of proteins. For the most part, food, clothing, shelter, medical services, and entertainment materials constitute our basic requirements. Further consideration will reveal that recent developments in research and production have made possible almost unbelievable potentials in the quantity and quality of these needs. Consequently, from the mere physical point of view, essential production facilities can apparently be expanded indefinitely should the demand require it. In other words, we now have the necessary knowledge, and with the necessary machines we could produce these materials to satisfy almost every physical need that might develop — with the single exception of food. But when we start to appraise food production, we soon come to realize that an entirely different situation prevails.

In the light of present knowledge, the only general classification of foods we can justify is on the basis of their five fundamental chemical constituents, namely: proteins, carbohydrates, fats, vitamins, and minerals. Without delving into too many technicalities (which incidentally cannot be dismissed by ignoring them), when we look around the world we will find that vitamins and minerals are needed nutritionally in relatively small quantities, are available in native foods, and can be produced in most countries at relatively low costs. Furthermore, if all the animal fats, vegetable oils and carbohydrates that are available and produced each year in the form of various crops could be fed exclusively to humans, the people of the world would have more than enough for their needs; in fact, there would be more than they could possibly eat. Such a fact can be substantiated by any skeptic from existing records and compilations of the United Nations.

Tremendous Significance of Protein

When all the facts and figures are analyzed, it becomes apparent that there exists in the world today a terrible lack of protein of high nutritive value, such as that found in meat, fish, eggs, and milk, for

New Bedford Standard-Times

"A dead whale or a stove boat!"

example. It does not seem too far-fetched to suggest that the great lack of protein of high nutritive value is the crux of most of the woes of this globe. Whereas in ancient days, wars were fought over rare spices and other food staples, today probably most of our wars could be avoided if there was enough of the proper kind of protein to go around. In other words, we have a world shortage of food only because we have an apparent shortage of the proper types of food protein. The main reason we have a world shortage of the proper food protein is that we have not yet learned how to refine, recover, process, store, and distribute these food elements. True enough we have learned to do these things with our carbohydrates (such as granulated sugar, cornstarch, and chewing gum, for example) – with our fats and oils (such as butter and margarine, shortenings, essential oils used for flavorings, and so on) – with our minerals (such as ordinary table salt), and even with our vitamins such as we can buy over the counter in almost any drugstore today. Yet we do not know how to preserve foods and retain their protein values effectively.

Recently, monosodium glutamate (or "Accent" as one outstanding commercial product is identified) has been suggested for the contents of a third shaker of seasoning on our tables. This purified protein constituent is really an amino acid derivative – and amino acids are the building blocks that make up proteins. Gelatin is another and much older purified protein but, in themselves, neither it nor the sodium salt of glutamic acid, are the proper kind of food proteins to solve nutritional and dietary needs. In other words, aside from these few exceptions (which are really parts of proteins – and not nutritionally essential parts at that) we have not yet been able to assemble or synthesize proteins of meat, fish, egg, or milk; nor have we been able to refine, recover, process, store, and distribute these food proteins as we do other major chemical constituents of foods.

What Are Food Proteins?

Before we can hope to refine proteins, we must first know what they are chemically. Actually, we do refine and even synthesize some vitamins because we have the prerequisite chemical knowledge that enables us to do so. However, proteins are much more complex and do not yield to such ready analysis and synthesis as do the other chemical constituents of foods. Proteins are giant molecules, made up of many different smaller molecular units, or "building blocks," called amino acids. However, they are far from being mere assemblies of amino acids, for other complex biochemical combinations are also involved, just as bricks need mortar in making a building possible.

Nevertheless, we do know that there are certain amino acids that must be present in food if proteins are to satisfy human nutritional needs; such amino acids we term "essential." Actually, a score or more of amino acids are found in our foods. Of these, eight or 10 are considered essential, while the remainder are referred to as "nonessential" since apparently the human body can either get along without them or can synthesize them in its own metabolism.

The quantity and quality of proteins supplied by the diet are of vital importance to an individual's health at every age level. Although the public has heard a lot about the importance of vitamins and minerals as good health factors, it has heard precious little about the significance of the proper amounts and the proper quality of protein. Yet we need vitamins and minerals only in minute quantities each day – in parts per million in most cases, whereas we need appreciable quantities of proteins each day – about one twentieth (or 5 per cent) of our total food bulk. Whenever the total quantity or the average quality of the consumed protein falls significantly below accepted standards for good nutrition, the signs and symptons of protein deficiency may appear. Mild to moderate hypoproteinosis (the medical term for protein deficiency) is observed in the United States according to the results of reliable clinical observations.

Amino Acids and Their Importance

Nutritionists have demonstrated that amino acids are utilized in definite combining proportions. Those food proteins which contain amino acids in approximately the same proportions in which they are utilized in the body are most effectively assimilated by both adults and children. In order to be effectively utilized in the diet, the amino acids must be present in food in the proper proportions as well as the proper amounts. Because foods of animal origin such as meat, fish, milk, and eggs do contain amino acids in the proportions in which they are best utilized in the human body, nutritionists regard such animal proteins as of high nutritional quality. In other words, meat, fish, milk, and egg proteins are superior to the food proteins found in fruits, vegetables, and cereal grains. The same thought could be expressed by stating that, if consumed without milk, most breakfast cereals would be of low order nutritionally. When they are eaten with milk, whole or skimmed, the total protein intake is made available. Still more important

and significant is the fact that the total nutritional value of the combined milk and the breakfast cereal is greater than if the milk and the cereal were consumed and digested separately. The reason for two and two equaling more than four in this nutritional equation is that amino acids in milk are in such proportion and amounts as can contribute to an improvement of amino acid balance in the protein nutrition of any person eating the milk and cereal combination.

Again, it should be emphasized that for most efficient dietary utilization, amino acids must be present in foods in the proper proportions as well as in the proper amounts. Such results can be attained by the following means: (1) use of proper combination of food proteins (for example, cereal protein and milk protein) whose amino acid proportions exert a supplementary effect upon one another; (2) more even distribution of high-quality protein (for example, meat, fish, milk, or egg proteins) among the daily meals; and (3) use of specific amino acid supplements to low quality proteins to achieve amino acid proportions that conform to nutritional needs.

Our National Protein Supply

We, in America, are consuming about 60 grams per person per day of animal protein combined in the meat, fish, milk, and eggs we eat and about 35 grams per person per day of vegetable protein – or a total of 95 grams of total food protein per person per day. Since a pound is equivalent to 453.6 grams, we are eating, on the average, a little more than a fifth of a pound of total food protein per day, on the dry basis. All of our food contains varying amounts of moisture as well as other nutrients, with the result that the average person consumes about five pounds of foods per day – a figure, incidentally, which does not vary appreciably from year to year. Yet it is a good figure to keep in mind, for if you are in the food business, your problem is to find ways and means of getting your share of that five pounds.

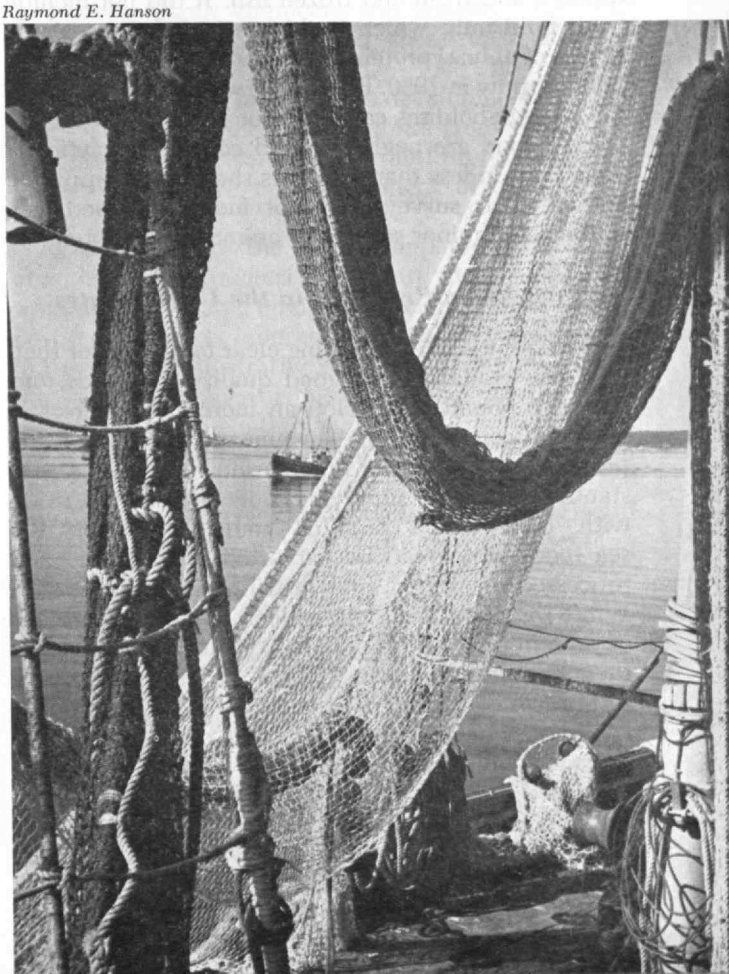
Through its Food and Nutrition Board, consisting of eminent scientists, the National Research Council of Washington, D.C., has set up what it calls "Recommended Dietary Allowances" which are in reality objectives toward which one should theoretically aim in planning practical dietaries. According to this source, about 70 grams of protein is the normal daily need for adults, whereas growing children need up to 100 grams per day. However, there are many nutritionists who consider these recommendations too low. Actually, the protein quota of the American soldier's ration in World War II was much more liberal – in fact, it was double the recommended daily allowance or 140 grams. And he ate all of it! In addition, there are several indications that our animal protein intake is below the amount we really desire and below that which is necessary for maximum vigor, disease resistance, and so on. When discussion is confined to the needs of our own citizens in the United States, it would appear that there exists an extensive untapped market for animal protein. The market for domestic consumption would have to be increased about 50 per cent in order that our population may be as well fed as the American soldier is being fed.

One of the main reasons why our present consumption of animal protein is subnormal is that the education of the public on their protein needs has not as yet taken hold. In 1950, 32 per cent of the animal protein production was consumed in all forms of meat, whereas slightly more – or a good third – was consumed in the form of fluid milk, cheese, dry milk, and so on. Approximately 39 per cent of the total milk protein produced in 1950 went into nonfood uses, according to figures released by the U.S. Department of Agriculture – a deplorable waste of food resources, to be sure. This also points to a potential source of food as our population pressure increases. As knowledge of nutrition increases, there will develop a greater demand for animal protein.

U.S. Food Protein Stocks and National Defense

The following preliminary study of the food protein stocks of the United States was made for the purpose of judging the adequacy of such stocks under current world conditions. In recent years, the development of nuclear and bacterial weapons, along with intercontinental bombers presumably capable of delivering them, has created a potential hazard to this nation's food protein resources not yet fully comprehended. The facts that the majority of people of this nation live far from the areas of food production and that about two-thirds of all protein consumed is of a highly perishable nature, suggests a complex situation which must eventually be thoroughly analyzed before any realistic defense program can be effective.

Raymond E. Hanson



The unit cost, as well as the total cost, of food protein is extremely high compared to the cost of the majority of defense metals, and clinical evidence indicates that moderately serious deficiences of high-quality protein nutrition exist among substantial numbers of the American people. This information has helped to point up the importance and urgency of an immediate review of this nation's position and attitude regarding the problem of food protein supply. In furthering this effort, the food protein stocks of the United States have been surveyed and broken down in terms of the number of days' supply of animal and vegetable protein available to the population on certain dates or during certain periods. The values quoted are in terms of estimated disappearance rates. The daily rates are approximately 60 grams per capita (or 10,600 tons for the nation) of food protein of animal origin and 35 grams per capita (or 6,180 tons for the United States) from vegetable sources. A distinct differentiation is made between animal and vegetable protein because of the large differences in their biological nutritive quality or in their ability to satisfy protein hunger when used in the customary manner.

The stocks of animal protein surveyed include those which stood between the farms and the American homes as of March and April, 1953. They were estimated at 13.9 days supply at the current disappearance rate of this type of protein as explained above. On January 1, 1952, these stocks amounted to about 12.5 days and during the 1945–1950 period they averaged about 14 days supply of animal protein. These stocks included: beef; veal; pork; lamb; mutton; offal; cheese; evaporated, condensed, dry, whole and nonfat dry milk; shell, frozen, and dry eggs; chickens and turkeys; and fresh and frozen fish. It did not include fresh fluid milk which is this nation's largest single source of animal protein, and constituted 33.4 per cent of the supply in 1950. Fluid milk was omitted because the storage-holding capacities of this most valuable protein food are negligible and could be practically wiped out in less than 72 hours should the supply be cut off. This survey does not include canned fish, rabbits, and minor sources of animal food protein.

Population Pressures in the United States

Perhaps it is now becoming clear to the reader that, with the availability of good quality sea foods, our nation is bound to develop an increasing interest in sea-food consumption. This means that, with the proper development of our marine resources, a substantial factor in supplying our national nutrition with high-quality proteins could easily be the sea foods which can be harvested by mariners and processed, packaged, and distributed by processors. While the foregoing facts, concerning the importance of protein foods of proper quality and the prospect of their consumption being increased, are not positive assurances in themselves, the steady increase in population does definitely indicate that our over-all food consumption is bound to go up. It is not generally appreciated that the steady increase in our population exerts great pressure upon our national food production. Perhaps, the following facts will serve to indicate that this is no idle conjecture.

By 1975, the United States must boost agricultural production by the equivalent of 115,000,000 acres merely to feed and clothe the predicted increased population if our present standards of living are to be maintained. Present indications are that we may be able to get an additional 30,000,000 acres from irrigation and drainage projects, flood control, and land-cleaning operations. The conversion of another 15,000,000 acres, from the production of food for draught animals to crops for human consumption as mechanization of agriculture is further advanced, will still leave a 70,000,000 acre deficit. We must then adopt one of two alternatives: (1) reduce our exports and import food; or (2) increase our own food production. The problem of feeding five people in 1975, for every four we are now feeding, is going to pose many problems, not only for American agriculture and fisheries but for the food-processing industries as well. We will not be permitted to forget that our population is increasing faster than is food production – the present ratio being of the order of 15 for present population growth to 9 for current food production increases. Also, we shall come to realize – if we do not already do so – that for about 15 years American agriculture has already faced an "all-out" production demand to meet a continuing and expanding need. It is therefore apparent that our present challenge will have to be met largely by higher yields, improved production and processing practices, as well as by expanded researches of industrial and agricultural chemists and extended practical applications by agricultural extension workers and food technologists.

It would be folly to assume we shall meet this challenge solely on the premise that necessity is the mother of invention. We mortals have no control over the weather. Even our rain makers have not been a howling success.

Nutritional Science and Its Teachings

We have now pointed to certain facts which augur well for any food industry concerned with the production and distribution of products that are rich in high-quality proteins. All known sea foods are of such nutritional quality. Without going into detail, it is apparent that, within the span of a half century, the science of nutrition has presented a constantly changing picture. According to the trends in research, as well as the appeals to the imagination, first one type of emphasis and then another has dominated the prevailing thinking. As a consequence, we have witnessed: (1) an era in which the true significance of the calorie has been realized; (2) a period in which it was ascertained that starvation does not shorten illness or lessen debility; (3) the passing of an era in which "intestinal auto-intoxication" – presumed to be due to a high-protein diet – was considered the cause of almost every ill to which human flesh is heir; (4) the emergence and flowering of the glamourous vitamins and their more prosaic mineral supplements, and finally, (5) the recognition and true appreciation of the value of protein in nutrition.

Perhaps, the most significant fact of all nutritional science is the realization that it is complete systems

(*Continued on page 423*)

Investing in the Future

A Brief Review of the Growth of Research Activities in the United States for the Past Decade

By PAUL COHEN

ORGANIZED research, which may with justice be called the generative organ of the industrial state, is continuing the rapid growth which has characterized it for the past few decades. Not only are this country's expenditures on research growing in dollar volume, they also appear to be taking a larger percentage of the total national income.

An outstanding example is medical research, which in the 10 years between 1941 and 1951, saw a tenfold increase in money allotments. (For research in general, the increase during this same period was fourfold.) In 1940, about 0.024 per cent of the national income went for studies of disease and related problems. In 1950, this country spent three times as much proportionally, that is, not quite one tenth of a cent out of every dollar, or 0.074 per cent on medical research. In this same decade, which witnessed large fund-raising campaigns aimed at combating some of the major causes of death, the federal government rose from a very minor to the major source of funds for such work. Out of the $181,000,000 spent on medical research in 1951, the federal government gave $76,000,000; industry gave $60,000,000; and other sources, including the foundations, contributed $45,000,000.

Compared to the costs of industrial and military research, these sums are trivial. The total amount spent on scientific and engineering research in this country in 1952 is estimated by the Research and Development Board at about three and three-quarter billion dollars. A third of this sum was spent directly by the government or by the colleges and universities (which are in part financed by the government). The remainder of this amount went to support private or industrial laboratories.

An interesting aspect of this growth is the rise of the federal government as a patron of research, although it should be emphasized that this is far more strikingly an increase in absolute magnitude than in the percentage of the total research burden supported by the government. In the period 1936–1937, when the total outlay on research in this country was about $270,000,000 per year, the federal government spent about $120,000,000 per year (of which $50,000,000 were emergency funds), industry spent about $100,000,000, and the contribution of the universities and colleges was about $50,000,000.

In 1952 when the total research outlay was estimated at more than 3.7 billion dollars, the government spent about 2.2 billion dollars. From the immediate prewar period to the present, government expenditures have grown from somewhat more than 40 per cent to about 60 per cent of the total. Most government-sponsored research today is military research, or is at least motivated by military considerations, for the great bulk of government research funds comes either from the Department of Defense or the Atomic Energy Commission.

The Research and Development Board has recently completed a survey dealing with some of the aspects of spending the more than two billion dollars (2.5 billion in 1952) made available annually to industrial laboratories. The survey covered nearly 2,000 companies which together spent about 85 per cent of the funds available for industrial research. Of the 96,000 research engineers and scientists (as contrasted with production engineers or supporting workers such as draftsmen or technicians) employed by these 2,000 companies, two out of three were with companies with 5,000 or more employees. There are 34 companies in this country having research staffs of 500 or more professional employees. Some 18 companies report 1,000 or more research engineers and scientists on their staffs. Half the engineers and scientists in industry now work in groups of more than 500. Undoubtedly, this is a significant factor in the development of engineering unions, and in other shifts from traditional relationships between employer and professional employee which have become evident in the postwar years.

As compared to the small companies, the larger organizations characteristically hire more supporting workers per research engineer or scientist, that is, proportionally more laboratory assistants, machinists, draftsmen, administrative and clerical personnel. On the other hand, there is more tendency for the small companies to subcontract supporting functions. Thus their engineers may assemble the basic information and specifications, lay out the broad outlines of the design, and then have the detailed drawing work and machining of the prototype equipment done elsewhere. On the basis of actual employees, the average support ratio, that is, the number of support workers per research worker, is about 1.5; it varies, however, from 0.9 for companies with less than 500 employees to 1.6 for those having 5,000 or more employees.

Government funds are channeled into a relatively few industries. These are aircraft, electrical machinery, instruments, and (the omnipresent catchall term) nonmanufacturing, which refers primarily to consulting firms and nonprofit research agencies. In

(*Concluded on page 426*)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Elected

VOTING for officers of the Alumni Association, alumni term members on the M.I.T. Corporation, members of the National Nominating Committee, and class representatives on the Alumni Council, the Institute's alumni body has elected those listed below to administer the affairs of the Association beginning with the fiscal year, July 1, 1954. April 25 was the closing date for the ballot to be received in the Alumni Office.

To the office of president will come Hugh S. Ferguson, '23, for a one-year term. Mr. Ferguson is president of the Dewey and Almy Chemical Company of Cambridge. Gilbert M. Roddy, '31, will serve as vice-president for two years, and on the Executive Committee will be Donald W. Kitchin, '19, and A. Robert Tonon, '22 – also for a period of two years. Mr. Roddy is vice-president of the Boston Manufacturers Mutual Fire Insurance Company and of the Mutual Boiler and Machinery Insurance Company, Boston, while Messrs. Kitchin and Tonon are with the Cambridge firms of Simplex Wire and Cable Company and Peter Gray Corporation, respectively.

The three Alumni elected as alumni term members on the Institute's Corporation, to serve for five years, are: Ray P. Dinsmore, '14, Vice-president, Goodyear Tire and Rubber Company, Akron, Ohio; William J. Sherry, '21, Oil Producer, Tulsa, Okla.; and Horatio L. Bond, '23, Chief Engineer, National Fire Protection Association, Boston.

Named for a term of three years on the National Nominating Committee are: David J. Sullivan, '24, for District 3; William S. Brackett, '23, for District 6; and Morgan A. Collins, Jr., '27, for District 7.

Classes whose numerals end in zero or five elected the following, for five-year periods, to serve as class representatives on the Alumni Council: George A. Packard, '90; Andrew D. Fuller, '95; Elbert G. Allen, '00; Robert W. McLean, '05; Herbert S. Cleverdon, '10; Azel W. Mack, '15; Edwin D. Ryer, '20; F. Leroy Foster, '25; Morell Marean, '30; John D. Hossfeld, '35; John L. Danforth, '40; Thomas A. Hewson, 6–45; and John T. Weaver, '50.

Class Reunions

Listed below is the latest available information on class get-togethers and reunions which are to be held in conjunction with Alumni Day on Monday, June 14, and on other dates:

1894 June 12. Meeting in Room 7–106, M.I.T., 10:00 A.M. Samuel C. Prescott, Secretary, Room 16–317, M.I.T., Cambridge.

1899 June 11–13. Burton House, M.I.T., Cambridge. Burt R. Rickards, reunion chairman, 381 State Street, Albany 10, N.Y.

1900 June 15–17. The Pines, Cotuit, Mass. Elbert G. Allen, Secretary, 11 Richfield Road, West Newton 65, Mass.

1904 June 11–13. *50th reunion* at Oyster Harbors Club, Osterville, Mass. Carle R. Hayward, reunion chairman, Room 35–304, M.I.T., Cambridge.

1909 June 11–13. Chatham Bars Inn, Chatham, Mass. Francis M. Loud, reunion chairman, 351 Commercial Street, Weymouth 88, Mass.

1912 June 11–13. Snow Inn, Harwich Port, Mass. Frederick J. Shepard, Jr., Secretary, 31 Chestnut Street, Boston.

1914 June 18–20. Sheldon House, Pine Orchard, Conn. Charles P. Fiske, reunion chairman, 1775 Broadway, New York 19, N.Y.

1915 June 14. Class family cocktail party, Algonquin Club, 217 Commonwealth Avenue, Boston, from 5:00–7:00 P.M. Azel W. Mack, Secretary, 40 St. Paul Street, Brookline 46, Mass.

1916 June 11–13. The Treadway Inn (formerly Coonamessett), North Falmouth, Mass. Ralph A. Fletcher, Secretary, Box 71, West Chelmsford, Mass.

1919 June 11–13. Wentworth by the Sea, Portsmouth, N.H. Wilfred O. Langille, reunion chairman, Diehl Manufacturing Company, Finderne, Somerville, N.J.

1924 June 11–13. Sheldon House, Pine Orchard, Conn. George W. Knight, reunion chairman, 36 Arden Road, Watertown, Mass.

1929 June 11–13. *25th reunion* at Baker House, M.I.T., Cambridge. Walter H. Gale, reunion chairman, Room 3–207, M.I.T., Cambridge.

1934 June 11–13. Wentworth by the Sea, Portsmouth, N.H. Carl H. Wilson, reunion chairman, 79 Damon Avenue, Melrose 76, Mass.

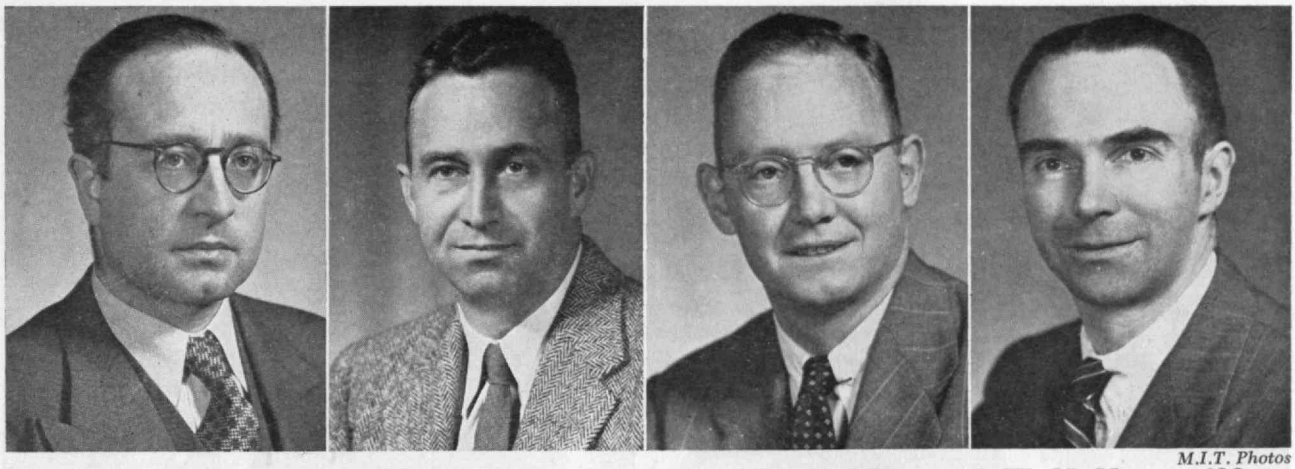
1939 June 11–13. Snow Inn, Harwich Port, Mass. Oswald Stewart, 2d, reunion chairman, 36 Pleasant Street, Marblehead, Mass.

1944–2 June 11–13. Hotel Curtis, Lenox, Mass.

1944–10 Henry C. Bourne, Jr., reunion chairman for 1944–2, Room 10–119, M.I.T., Cambridge. F. Scott Carpenter, Jr., reunion chairman for 1944–10, 39 Middle Street, Hingham, Mass.

1949 June 12–13. Chatham Crest, Chatham, Mass. Archie H. Harris, 3d, reunion chairman, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge.

For further information please consult your class secretary or reunion chairman to make arrangements for attending Alumni Day events and class reunions in June.



M.I.T. Photos

G. de Santillana | M. S. Livingston | R. C. Lord | W. M. Murray, '33

Professorial Progress

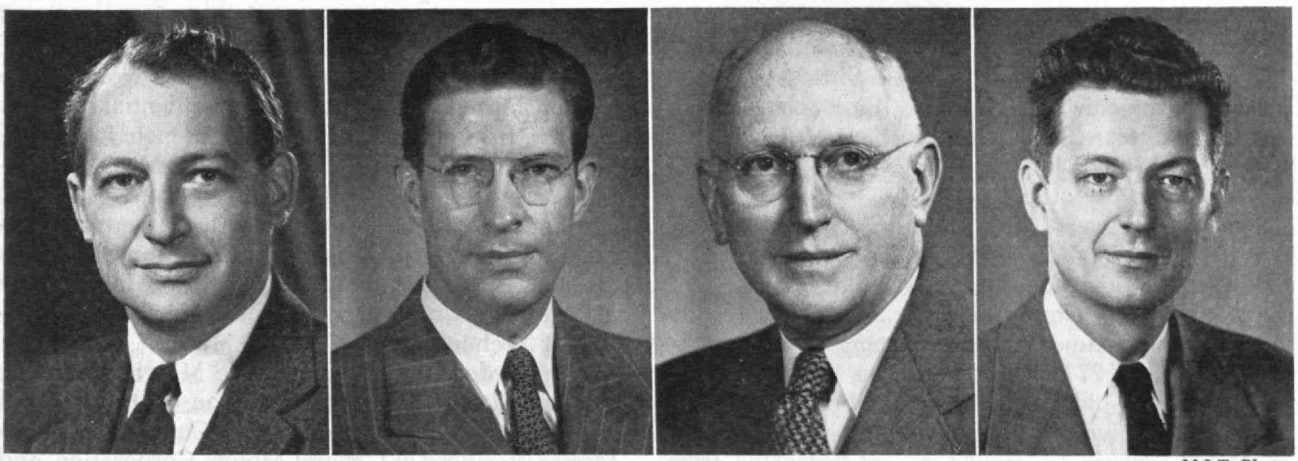
PROMOTIONS on the Faculty of the Institute, which will become effective on July 1, were announced in April. Members of the staff appointed to the rank of full professor are: David F. Waugh, Department of Biology; Glenn C. Williams, '42, Department of Chemical Engineering; Richard C. Lord, Department of Chemistry; Karl L. Wildes, '22, Department of Electrical Engineering; George de Santillana and Walt W. Rostow, both of the Department of Humanities; William M. Murray, '33, Department of Mechanical Engineering; and M. Stanley Livingston, Department of Physics.

Assistant professors promoted to the rank of associate professor are: Holt Ashley, '48, Department of Aeronautical Engineering; Robert M. Solow, Department of Economics and Social Science; Thomas F. Jones, Jr., '40, Samuel J. Mason, '47, and David C. White, all of the Department of Electrical Engineering; Norman C. Dahl, '52, and Kenneth R. Wadleigh, '43, both of the Department of Mechanical Engineering; Martin A. Abkowitz, '40, Department of Naval Architecture and Marine Engineering; and Francis L. Friedman, '49, and Robert W. Williams, '48, both of the Department of Physics.

Promotions to the rank of assistant professor are: Leon Trilling, Department of Aeronautical Engineering; Robert C. Reid, Department of Chemical Engineering; Roy Olton and Jesse H. Proctor, both of the Department of Economics and Social Science; Stephen M. Simpson, Jr., '53, Department of Geology and Geophysics; Lawrence W. Towner, Department of Humanities; Thomas V. Atwater, Jr., Edward H. Bowman, 2–46, and Albert H. Rubenstein, all of the School of Industrial Management; Thomas P. Goodman, 6–45, and Alan H. Stenning, '51, both of the Department of Mechanical Engineering; Richard J. Charles, Department of Metallurgy; and George W. Clark, '52, and Jack W. Rosengren, both of the Department of Physics.

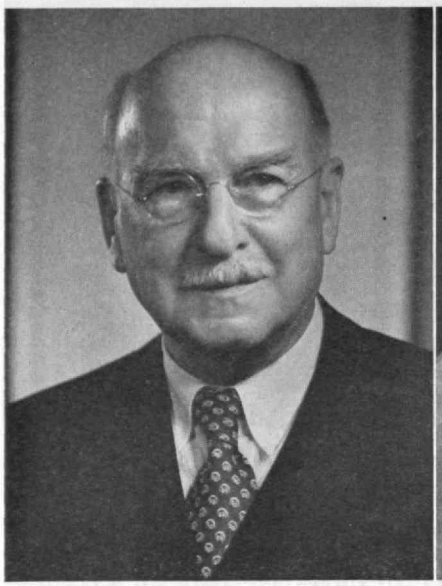
Members of the staff advanced to the rank of instructor include: Edward Arthurs, '51, W. Howard Card, Mahmoud M. Riaz, '50, and Franz E. Steinberg, '51, all of the Department of Electrical Engineering; Thomas F. Ostin and John B. Stewart, both of the School of Industrial Management; Donald G. Aronson, '51, Fred G. Brauer, '53, Noel J. Hicks, John E. Kimber, Jr., '52, and Gustave Solomon, all of the Department of Mathematics; and Wilfred L. Freyberger, '47, Department of Metallurgy.

New appointments include: Robert F. Lambert, Visiting Assistant Professor, Department of Electrical Engineering; Gordon MacDonald, Assistant Professor, Department of Geology and Geophysics; Joseph D. Everingham, Assistant Professor, Department of Humanities; Robert L. Hamman, '49, instructor in the School of Industrial Management.



M.I.T. Photos

W. W. Rostow | D. F. Waugh | K. L. Wildes, '22 | G. C. Williams, '42

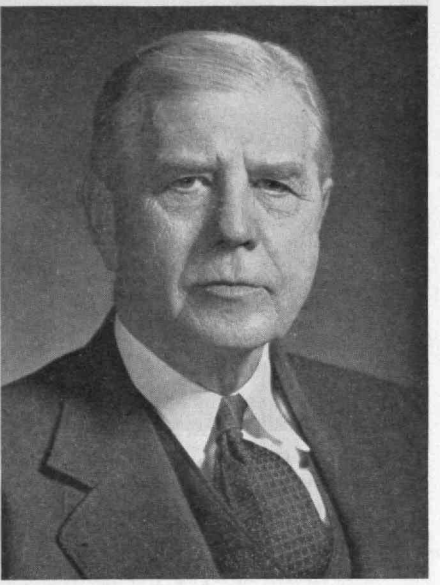


Karsh, Ottawa

Pierre S. du Pont, '90

Franklin Grant

William S. Newell, '99



Henry E. Worcester, '97

Three life members of the Institute's Corporation whose deaths occurred during the month of April. Their loss will be shared by M.I.T. and the industries with which they were associated.

Corporation Loses Three Life Members

It is The Review's sad duty to record the loss, by death, of three life members of the Corporation of the Institute during April. After serving on the Corporation for 35 years, Pierre S. du Pont, '90, died in Wilmington, Del., on April 5, as recorded in the May, 1954, issue of The Review. Four days later, Henry E. Worcester, '97, for many years a member of the Alumni Council and of the Advisory Council on Athletics, died in Orleans, Mass. Death took William S. Newell, '99, one of the nation's leading shipbuilders, in Bath, Maine, on April 18.

Mr. Worcester, who lived in Winchester, was born in Tewksbury, Mass., in 1875. After attending M.I.T. with the Class of 1897, he entered the sugar refining business in New York City. His return to Boston in 1907 as superintendent of the Revere Sugar Refinery was followed by a term from 1920–1946 as vice-president of the Revere Sugar Refining Company. Mr. Worcester was also vice-president of the United Fruit Company from 1929–1946.

A term member of the M.I.T. Corporation from 1931–1936, Mr. Worcester was for many years a member of the Institute's Alumni Council and the Advisory Council on Athletics. In addition to his activities as director of many firms, he was a member of the American Society of Mechanical Engineers, Engineers Club of Boston, Boston Chamber of Commerce, and many others.

Mr. Newell was a life member of the M.I.T. Corporation from 1943–1952 when he became an emeritus member. Founder and chairman of the Board of the Bath Iron Works Corporation, Mr. Newell also established two wartime yards, producing a total of 74 destroyers and 274 freighters during World War II.

The 76-year-old industrialist was born in Albany, N.Y., and received the degree of bachelor of science at M.I.T., where he served as an instructor from 1900–1902. Mr. Newell joined the Bath Iron Works as a draftsman and in 12 years attained the post of engineering works manager. Later he spent two years in a Camden, N.J., yard as general manager before returning to Bath, where he leased the old plant, organized a new corporation, and revived the town's shipbuilding industry with the construction of private yachts. During the depression Mr. Newell kept the yards functioning by a few contracts for fishing trawlers and Coast Guard patrol boats, but at the outbreak of World War II, his shipyards, machinery, and skilled workmen rapidly converted to the production of highly lauded fighting ships. Mr. Newell introduced the sunken-basin construction method to the commercial shipbuilding industry.

Appointed by President Truman to the Atomic Energy Commission, Mr. Newell had also been a member of the American Bureau of Shipping, U.S. Naval Institute, American Society of Naval Engineers, North East Coast Institute of Engineers and Shipbuilders, and American Newcomen Society; a past president of the Society of Naval Architects and Marine Engineers, life member of the society's counterpart in Great Britain, former director of the National Association of Manufacturers, and for many years a director of the National Council of Shipbuilders. Awards for Mr. Newell's work in the field of shipbuilding include two presidential citations and the title of Chevalier in the French Legion of Honor. An alumni term member of the M.I.T. Corporation from 1936–1941, life member from 1943–1952, and emeritus member since 1952, he served as president and director of several firms in Maine and was awarded honorary degrees by Bowdoin and Colby colleges, the University of Maine, and Stevens Institute of Technology.

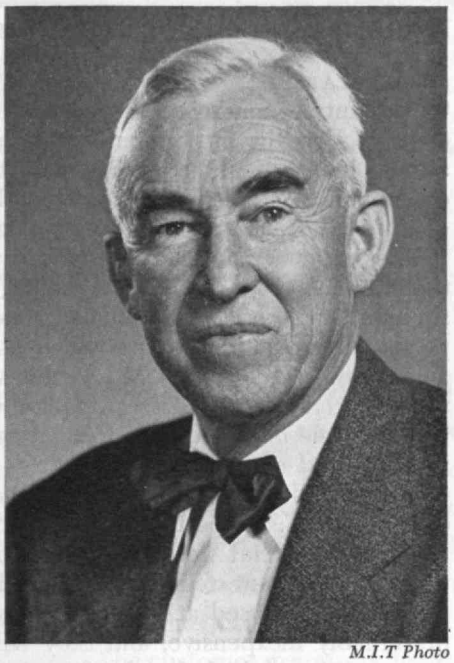
As recorded on page 358 of the May issue of The Review, Mr. Du Pont was chairman of the Board of E. I. du Pont de Nemours and Company, Inc., a former president of General Motors Corporation, and for 35 years a member of the M.I.T. Corporation.

M.I.T Photo

John B. Babcock, 3d, '10 . . .

To Retire

Two members of the Faculty will retire this summer after long service at the Institute. They are John B. Babcock, 3d, '10, Professor of Railway Engineering in the Department of Civil and Sanitary Engineering, and Gordon B. Wilkes, '11, Professor of Heat Engineering in the Department of Mechanical Engineering. Professor Babcock will remain at M.I.T. after July 1 as a lecturer in the Department of Civil and Sanitary Engineering. Both men are popular with the students and have devoted their professional lives to teaching.



M.I.T Photo

Gordon B. Wilkes, '11 . . .

a native of Boston, where he was born in 1889, received the degree of bachelor of science at M.I.T. in 1910. After five years' experience as a railway, highway, and construction engineer, he returned to the Institute as instructor in the Civil Engineering Department. In 1919 he was promoted to assistant professor of railway engineering; in 1925, to associate professor of railway and highway engineering; and, in 1928, to the rank of full professor of railway engineering.

In addition to his teaching activities, Professor Babcock has been a consultant on railway, highway, and airport engineering; and during World War II he served as Railroad Evacuation Officer, Evacuation Division, Massachusetts Committee on Public Safety. Awarded a special prize in 1936 by the Boston Society of Civil Engineers for his presidential address on the society and its founder members, Professor Babcock is also a member of the American Society of Civil Engineers, American Railway Engineering Association, American Society for Engineering Education, and American Road Builders' Association. He is one of the joint authors of a section on Railway, Highway, and Airport Engineering in the *Civil Engineering Handbook.*

born in Buffalo, N.Y., in 1889, received the degree of bachelor of science at M.I.T. in 1911. He joined the staff of the Department of Physics as an assistant in heat measurements and a year later was promoted to instructor. In 1918 Professor Wilkes was named assistant professor of industrial physics; in 1924, associate professor; and in 1930, full professor. In 1934 he transferred to the Department of Mechanical Engineering, as professor of heat engineering.

The author of a book entitled *Heat Insulation,* Professor Wilkes has written numerous articles on engineering subjects. In the temperature control chamber of the Department of Physics at M.I.T., in 1928, Professor Wilkes conducted tests on insect pests, in co-operation with the United States Bureau of Entomology. In 1942, he directed studies at the Institute, on heat capacity of insulating materials. His extensive research activities included a World War II project for the National Defense Research Council. A fellow of the American Ceramic Society, Professor Wilkes holds membership in the American Society of Heating and Ventilating Engineers, American Society of Refrigerating Engineers, American Association for the Advancement of Science, and Phi Beta Epsilon.

Undergraduate Endowment

Receipt of a gift of $25,000 for undergraduate scholarship endowment at the Institute has been announced by Dean Thomas P. Pitré, Director of Student Aid at M.I.T. The new scholarship fund has been established by George M. Bunker, President of the Glenn L. Martin Company (Baltimore, Md.) and a graduate of the Institute in the Class of 1931, and a group of his associates. It will provide for a $1,000 scholarship over a four-year period.

In announcing the grant, Dean Pitré said: "We are especially grateful to receive grants for undergraduate scholarship endowment because the Institute urgently needs to increase its capital funds in this area. In common with many colleges and universities, scholarship applications at the Institute have continued to show a sharp upward trend.

"Last year's applications were 50 per cent above those of the year before, and this year's applications are two and a half times what they were four years ago."

The first award under the new grant will be made to a member of next year's freshman class at M.I.T. All awards will be restricted to residents of Maryland and the District of Columbia.

Atomic Wastes Sterilize Food

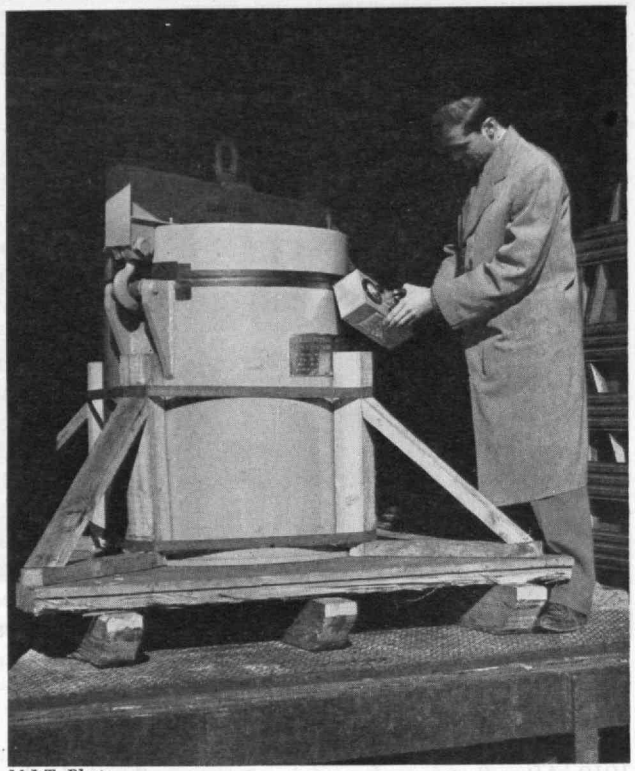
STERILIZATION of food products may soon be an important commercial peacetime use of atomic energy. For the first time, waste products from atomic bomb manufacture are now to be used for experimental irradiation of foods in the laboratories of the Department of Food Technology at M.I.T.

The Argonne National Laboratory, operated by the University of Chicago in Lemont, Ill., has made shipment to M.I.T. of the first of a new type of experimental radiation source which uses nuclear reactor waste products. At M.I.T. this source is to be used in connection with equipment which will for the first time make possible irradiating food in commercial-sized containers.

This, says Professor Bernard E. Proctor, '23, Head of the M.I.T. Department of Food Technology, brings commercial sterilization of food by radioactivity an important step nearer: the radioactive fission products to be used at M.I.T. are a waste product, presumably inexpensive, and they will be used under conditions which for the first time approximate those needed in commercial food production.

Professor Proctor will be assisted by Samuel A. Goldblith, '40, Assistant Professor of Food Technology, in the research program which is under the sponsorship of the Atomic Energy Commission through its Division of Reactor Development. It is a continuation of work under way since 1950 in which radioactive cobalt has been used as a source of nuclear energy.

Stephen Lawroski, Director, Chemical Engineering Division, Argonne National Laboratory, said that the new source which uses the waste products of a nuclear reactor is regarded as a significant step forward in nuclear engineering and in developing peacetime uses of atomic energy.



M.I.T. Photo

Edward Karaian, a member of the Institute's radiological safety group, checks the new radiation source utilizing nuclear reactor waste products on its arrival at M.I.T.

Intercollegiate Rowing

THE cardinal and gray will be represented by three heavyweight crews – varsity, junior varsity, and freshman – in the 52d Annual Regatta of the Intercollegiate Rowing Association to be held on Saturday, June 19, on Onondaga Lake, Syracuse, N.Y.

The Technology crews will compete with oarsmen from Boston University, University of California, Columbia University, Cornell University, Navy, University of Pennsylvania, Princeton University, Rutgers University, Leland Stanford Junior University, Syracuse University, University of Washington, and University of Wisconsin.

The Freshman race will run for two miles and is scheduled to begin at 3:45 P.M., Eastern Daylight Time. The Junior Varsity and Varsity races will cover a distance of three miles each.

Tickets may be purchased through William H. Combs, '54, M.I.T. Crew Manager, 487 Commonwealth Avenue, Boston, or from James Decker, Athletic Department, Syracuse University, Syracuse, N.Y.

As this issue of The Review goes to press, M.I.T. crew members are anticipating the date of Saturday, May 15, when they will compete in the heavyweight sprint championships of the Eastern Association of Rowing Colleges. This event, sponsored by the Washington Rowing Association, will be held on the Potomac River at Hains Point, Washington, D.C.

Acting Head of Course II

PROFESSOR JAMES HOLT, Executive Officer of the Department of Mechanical Engineering since 1946, has been named acting head of his Department pending the appointment of a permanent head, Professor C. Richard Soderberg, '20, Dean of the School of Engineering, announced in April.

Professor Holt was graduated from Harvard University and M.I.T. in 1918, being awarded the degree of bachelor of science simultaneously from each institution. He joined the M.I.T. staff as an assistant in 1919, becoming an instructor in 1920, assistant professor in 1927, associate professor in 1935, and full professor in 1947.

The Council Meets

IN the unavoidable absence of Horatio L. Bond, '23, President of the Alumni Association, the 303d meeting of the Alumni Council was called to order on April 26, by Dwight C. Arnold, '27, Vice-president. As usual, the dinner meeting was held at the M.I.T. Faculty Club in the Sloan Building, and 107 members and guests attended.

Resolutions for two late members of the Council were read: Raymond Stevens, '17, presented the resolutions on Frederick Bernard, '17, and John B. Ilsley,

(*Continued on page 412*)

BUSINESS IN MOTION

To our Colleagues in American Business . . .

Some years ago it became evident to us that there was a need to make modern information about methods of welding copper and its alloys more widely available. Many industrial companies preferred to use these metals because of such qualities as corrosion resistance, long life, and workability, but were deterred by welding problems. In response to this need, Revere established a Welding Section in its Research and Development Department, to approach the subject from both a theoretical and a practical standpoint. Detailed laboratory studies, reduced to practicality, have enabled the Welding Section to make valuable contributions to industry. Here are a few examples out of many.

• A customer had a contract to make steel pressure vessels, which had to have a copper gasket surface on steel tube sheets. The original design called for machining a groove in the steel, inserting a copper bar, and welding it in place. Then another machining operation would be required to level the surface. Revere suggested that perhaps the first machining operation would be unnecessary if the copper gasket could be applied by welding. The laboratory made a few but important modifications in the inert-gas shielded-arc method, and by developing the correct procedures saved the customer both time and money.

• Another customer was making oil coolers. The heads are threaded, and were being sealed by silver brazing. To remove the heads for cleaning, it was necessary to chip out the braze. We recommended welding as cheaper, just as satisfactory, and also said the weld metal could be more quickly removed when the time came to clean the cooler. Revere was permitted to demonstrate the method, which proved entirely successful. The customer gratefully reported that he was saving between $300 and $400 on each oil cooler.

• Here is a quotation from a recent letter. "Your welding people were in our plant this past week and certainly went beyond what we expected in giving us technical advice. While I say went beyond expectations, what I'm getting at is that they certainly showed the proper spirit of cooperation to any company which is a potential customer or even a customer, as we are. They assisted us very greatly in a couple of problems that we had here at the plant, and I certainly felt it was well worth writing and telling you."

Our many contacts with industry prove to us that suppliers of materials of all kinds possess a great deal of helpful knowledge about the specification, application and fabrication of their products. Such information can be had easily. Just take your suppliers into your confidence, and pursue with them the subject of possible processes and economies.

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THE INSTITUTE GAZETTE

(*Continued from page 410*)

'97, presented resolutions on Henry E. Worcester, '97 – both of which were accepted by a silent rising vote.

As secretary of the Alumni Association, Donald P. Severance, '38, reported that 39 Alumni, whose undergraduate attendance at M.I.T. had been interrupted by World War II, had requested changes in class affiliation. Also reported was the fact that between March 4 and March 26, eight representatives of the Council had visited affiliated clubs in Haifa, Israel, and nine clubs in the United States as far as Knoxville, Houston, and Minneapolis. It was also announced that, at its meeting in the afternoon, the Executive Committee had approved recognition of the M.I.T. Club of Taiwan (Formosa) which had its first meeting at Taipei on March 24, 1954.

Also announced was nomination, by the Executive Committee, of Theodore T. Miller, '22, for a five-year term on the Alumni Fund Board, succeeding George Warren Smith, '26, whose term expires on June 30, 1954; and decision to publish, in 1955, a new edition of the Alumni Register.

As chairman of the Committee on Alumni Day, Mr. Miller announced final plans for this annual reunion, as already recorded on page 355 of the May issue of The Review.

As Director of the Alumni Fund, Henry B. Kane, '24, reported that 9,085 Alumni had contributed $201,500 to the Alumni Fund, as compared with 8,835 Alumni who had contributed $185,500 at the corresponding time a year ago.

By vote of the Alumni Council, action was taken to amend Article VII, Section 1 of the bylaws to read as follows:

"The annual dues, including subscription to *The Technology Review*, shall be four dollars ($4.00) for all types of members of the Association, other than Honorary or Life Members.

"Any member who in any year has made a contribution to the Alumni Fund of $4.00 or more shall thereby have paid his dues to the Alumni Association for that year."

With the conclusion of these items of business, the meeting was turned over to two guest speakers: Professor John M. Buchanan, Head of the Division of Biochemistry, and Professor Lawrence B. Anderson, '30, Head of the Department of Architecture.

Professor Buchanan spoke briefly of the role of the biochemist in modern science, and mentioned some of the work being done in that Division at M.I.T. With the aid of slides, he illustrated how new tools and techniques of atomic physics and electronics enable the biochemist to do effective work in the medical field. An outline of the work of the Division of Biochemistry was given by Professor Buchanan in the December, 1953, issue of The Review (page 87).

Professor Anderson spoke on the proposed long-range development of the Technology campus west of Massachusetts Avenue, including plans for lower-

(*Continued on page 414*)

COMING IN JUNE!

The record of the Institute's early struggles and triumphs

WHEN M.I.T. WAS "BOSTON TECH"

by Dr. Samuel Cate Prescott, M.I.T. '94

When M.I.T. Was "Boston Tech" records the history of M.I.T. from its beginning—a memorandum written by William Barton Rogers on March 13, 1846, entitled "A Plan for a Polytechnic School in Boston" — to the transfer of the Institute to its home on the Charles in Cambridge in 1916. Told in terms of men who built the Institute, this volume is history in the richest sense. . . . President Killian in a Foreword says of it:

"This book, happily, is more than formal history. It is a personal report, an essay in interpretation and remembrance which is important both for what it tells about M.I.T.'s first half-century and for what it tells about what Dean Prescott finds important and interesting in that half-century.

"Dean Prescott has been associated with the Institute for nearly two thirds of a century. He has known all of its presidents save Rogers, the founder. He has known the Institute from the vantage points of student, teacher, department head, dean, alumnus, and parent. He has had a formative influence on its policy-making and he has been an articulate protagonist of the Institute's program and policies. It is important that a man with this long and various experience at the Institute should write interpretively of its history.

"He views M.I.T.'s formative years not only with an expert's understanding but out of a deep sense of loyalty and devotion. This book is a testament of faith in an institution, an earnest of the author's abiding belief in the staff, students, and alumni he has known. Those who have had the privilege of knowing Dean Prescott and working with him will understand why this is true and will cherish this book as another example of his generosity of spirit and his deep commitment to his Alma Mater."

All royalties from *When M.I.T. Was "Boston Tech"* have been assigned by Dr. Prescott to the Alumni Fund.

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(*Continued from page 412*)

ing vehicular traffic on Massachusetts Avenue in the vicinity of the Institute. The new auditorium and chapel (see page 348, May, 1954, issue of The Review) were described, and Professor Anderson's plans showed locations of a proposed skating rink, a student union, additional athletic facilities and playing fields, two tiers of buildings to accommodate fraternities that choose to bring their houses on campus, another single dormitory, and permanent housing for married students and their families.

Nerve Composition

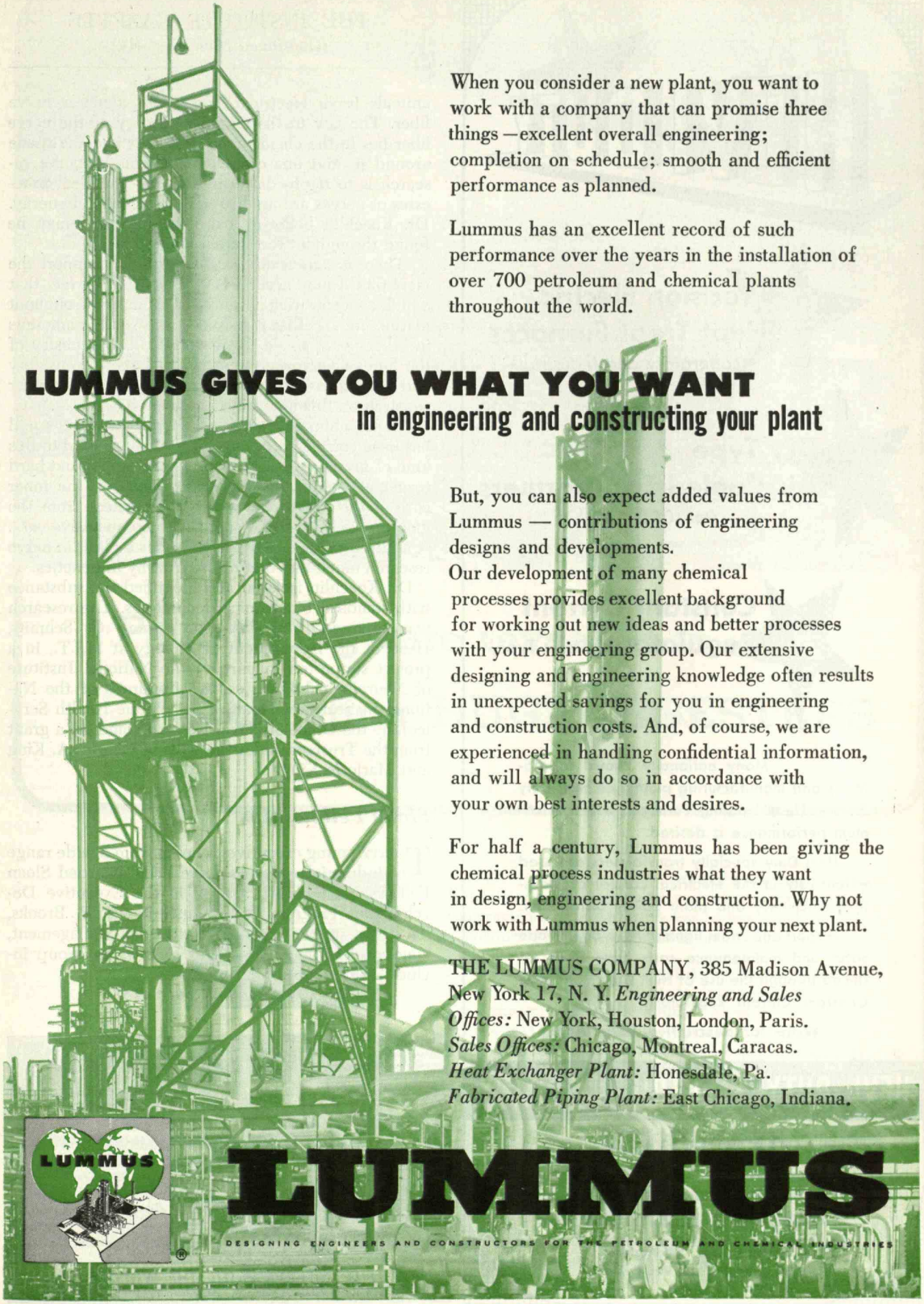
DISCOVERY of a novel biological acid which may provide important clues to understanding the general functioning of nerves was reported in April at a meeting of the American Societies for Experimental Biology in Atlantic City. The new biological substance has been isolated and identified by Bernard A. Koechlin, a research associate in the Department of Biology at the Institute, in recent M.I.T. work with the giant nerve fiber of the squid. It is isethionic acid which is chemically related to certain common detergents and which had not been expected to occur biologically

Dr. Koechlin's discovery solves a 20-year mystery about the chemical composition of invertebrate nerves. For at least two decades biological theory had predicted the existence of an unidentified acid in such nerves. This prediction was based on the fact that the number of known anions, or negatively charged particles, in such nerves was far short of the number expected in theory.

This predicted anion deficit has been accounted for almost exactly by the new substance, together with a small fraction of other acids also identified in the M.I.T. research. These other acids, which contain four carbon atoms (dicarboxylic), are also found in lobster and other invertebrate nerves. They are known to be products of sugar metabolism and consequently may be related to the energy metabolism in the nerve.

Anions are assumed to be involved in the physiological functioning of nerves, whose basic job is to conduct electrical impulses. The nerve impulse in all

(*Continued on page 416*)



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LUMMUS

DESIGNING ENGINEERS AND CONSTRUCTORS FOR THE PETROLEUM AND CHEMICAL INDUSTRIES

(*Continued from page 414*)

animals is an electrical signal sent along a nerve fiber. The key to the electrical energy of the nerve fiber lies in the chemistry of the fiber and the tissue around it, and one of the major aims of nerve research is to try to discover how the chemical processes of nerves are used to produce electrical energy. Dr. Koechlin believes that isethionic acid may be found throughout the animal kingdom.

"There is some evidence," he says, "to support the view that it may occur in other nerves. We feel that a high concentration is somewhat specific throughout marine life and that it may occur in smaller amounts in other nerve tissue. However, the biochemistry of the human nervous system is still largely a mystery and it is impossible to guess what significance further research on this new substance may have. . . ."

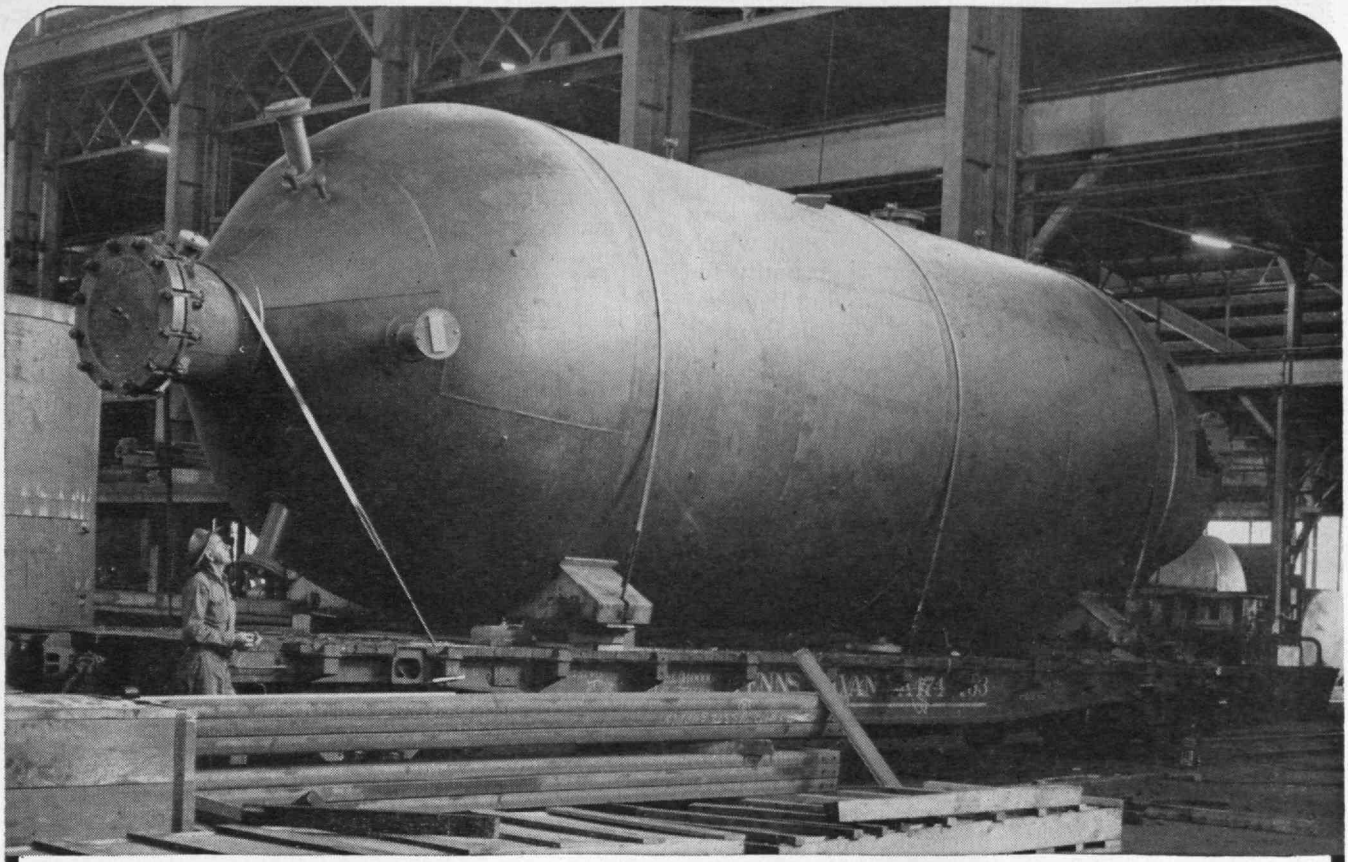
Dr. Koechlin explained that work with the squid has been carried on because it is ideally suited to this kind of investigation. Most nerves are small and hard to get at chemically, but pure axoplasm, the inner core of the nerve fiber, can be extracted, from the giant nerve fiber of the squid with comparative ease. It might be said that the squid holds a place in nerve research much like that of the fruit fly in genetics.

Dr. Koechlin isolated and identified the substance with standard biochemical techniques. The research was supervised by Professor Francis O. Schmitt, Head of the Department of Biology at M.I.T., in a project supported in part by the National Institute of Neurological Diseases and Blindness of the National Institutes of Health (U.S. Public Health Service), by the Office of Naval Research, and by a grant from the Trustees under the wills of Charles A. King and Marjorie King.

Sloan Fellowships

THIRTY young executives, chosen from a wide range of industrial concerns, have been awarded Sloan Fellowships for participation in the Executive Development Program at the Institute, E. P. Brooks, '17, Dean of the School of Industrial Management, announced. This year's Sloan Fellowship group includes four from foreign countries.

(*Concluded on page 418*)



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THE INSTITUTE GAZETTE

(*Concluded from page 416*)

Under the provisions of the Executive Development Program, the successful candidates are chosen early in their industrial careers when they have a long future service to industry ahead. The program, which continues for one year, provides an opportunity for orientation to the fundamentals underlying management action rather than a review of management policies and techniques.

The fact that the Sloan Fellows carry on their work at a center of technological development, such as M.I.T., provides a special opportunity for the Fellows to view the long-range development of business in the perspective of technological advancement, as well as within the economic and human framework of management problems.

The Sloan Fellows will begin their work at M.I.T. on June 19 under the leadership of Gerald B. Tallman, Associate Professor of Marketing, and Director of the Program.

The Republican Roosevelt

THEODORE ROOSEVELT'S foreign policy anticipated many of our current needs, according to a study just completed by John M. Blum, Associate Professor of History at M.I.T., and associate editor of the recent eight-volume series *The Letters of Theodore Roosevelt.*

In *The Republican Roosevelt,* published by the Harvard University Press, Professor Blum emphasizes that Roosevelt fully realized that the United States could not avoid involvement in the affairs of the world. Roosevelt considered Russia potentially the foremost European power. Although he felt that the decay and despotism of the old Russian empire immobilized her, he predicted that she would be a "serious problem" for later generations.

Roosevelt's concept of power was the keystone of his foreign policy, says Professor Blum. Not only did he accept the oneness of the world, but he insisted that the nation recognize its international obligations and keep in readiness sufficient mobilized resources to honor them.

Roosevelt was never quite sure of Japan, and thought she might possibly "enter into a general career of insolence and aggression." The best preventive, he maintained, was American power, particularly naval power.

"If Roosevelt's policy had faults," Professor Blum concludes, "it also had strengths, and he discerned some permanently useful principles for U.S. policy.

"If the use of force in international society has limitations, it also has legitimate capacities. Without force, the best intentions fail to stop destruction . . .

"Power is a present element in the conduct of world affairs. This being so, the rulers of the nation must be prepared, as Roosevelt was, constantly and unashamed to venture power politics. On this, well done, depends American security and possibly the prevention of another total war."

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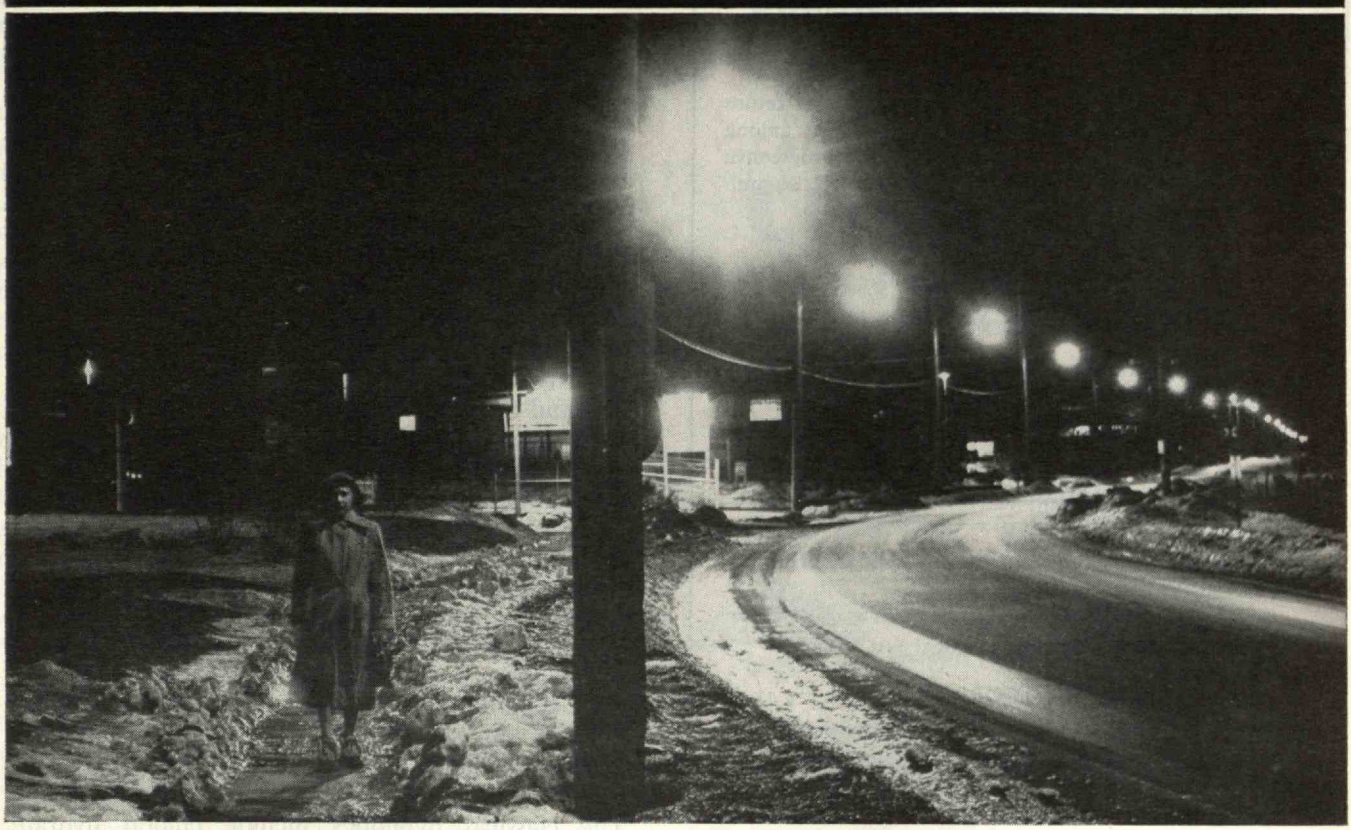

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NATURE'S SWEET RESTORER

(Continued from page 394)

classifications include the sleep-promoting agents as a discrete group, designated the hypnotics.

Let us return for a moment to the central nervous system stimulants, the wakefulness promoters. It is striking that one of these, the methyl purine caffeine (or its close pharmacological and chemical relatives theobromine and theophylline) are used throughout the world, by all peoples, in the form of various stimulating beverages. These include coffee, tea, cocoa, guarana, maté, and carbonated beverages of the cola variety. It is especially remarkable that use of caffeine or caffeine-like substances for stimulation has existed since olden times, when it was independently discovered in various parts of the world by widely separated primitive peoples having no cultural interchange. Tea and coffee, for example, were known to ancient peoples on the Asiatic continent. Kola nuts have long been used by West African natives. Guarana has been drunk by Argentine natives, and maté by Brazilian Indians since before the era of recorded history.

Caffeine, in pure form, is also a basic pharmaceutical stimulant. It is used in standard preparations, in prescriptions, and in proprietary "awakeners." Another classical drug for central nervous system stimulation is strychnine. Benzedrine (also known as amphetamine) is a stimulant that is a relative newcomer to the pharmaceutical scene.

The hypnotics — the sleep-promoting drugs — are more numerous and more diverse than the stimulants. The classical hypnotics include chloral hydrate, veronal, various bromides, and opium derivatives (alkaloids), such as morphine or codeine. A newer class of hypnotics are the numerous derivatives of the barbituric acids, designated as the barbiturates. These include phenobarbital, pentobarbital, amytal, and others known by common or trademarked names. A wide variety of barbiturates are used because they have differing speeds of effectiveness and duration of action. The sleeping pills, concerning which one has, in the past, read newspaper accounts of baleful effects such as dependency, inadvertent overdosage and even intentional overdosage for suicide, have usually been barbiturates. By now the distribution of these potent hypnotics is controlled by means of effective legal regulations.

The hypnotics, paradoxically, do not actually promote natural sleep. Indeed no drug is known that can do this. The mode of action such a drug would need

to have is equally unknown because, as already pointed out, the basic mechanisms of sleep are not thoroughly understood. Hypnotics act by merely depressing excitability of that part of the brain known as the cerebral cortex; thus they pave the way for the supervention of natural sleep. Therefore hypnotics are ineffective unless other conditions favor sleep.

May pharmaceutical aids to sleep or wakefulness be employed with impunity? Innocuousness of the caffeine-containing stimulating drinks, in moderate amounts, has been established through centuries of use by human beings. They may be used freely to promote wakefulness, and conversely can be avoided when sleep is sought. The other pharmacological aids to sleep or wakefulness one does well to shun, except in emergencies. Even then they should be used only under close medical supervision.

The understanding this article has sought to provide, of the human body temperature cycle and its relationship to sleep, may be fruitfully exploited by those having problems of sleep or wakefulness. The practical course of action indicated is, manifestly, to establish and maintain, so far as possible, precise regularity in hours of going to bed and arising.

DISCOVERY AND INVENTION

(*Continued from page 400*)

As just one example, consider the case of a talented young man from the New York City suburbs. By age 15 he had designed and built an operating liquid fuel rocket engine – alone – an amazing feat which won him First Prize in the regional Science Fair. This 11th-grade high school student should go far in either engineering or science; he has the combination of ability and strong motivation which results in achievement. But he has already decided otherwise: he intends to study medicine rather than engineering, since he could "earn a better living" as a doctor. (See Table 6.) It is worth noting that the prestige and salary value of medicine in the United States have paid dividends in medical discoveries.

In conclusion, the exponential growth of science and technology in the Eighteenth and Nineteenth Centuries has reached a plateau. One authority suggests that further development of technology is likely to come from advances in the sciences. Hence a study of the present state of science can provide a glimpse of the future of technology. The striking feature of

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DISCOVERY AND INVENTION

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contemporary science, particularly in the United States, is the emphasis upon applied science at the expense of fundamental research.

A comparison of recent discoveries, inventions, and Nobel prize winners in science indicates that the United States had a lower productivity per capita in pure science than western European countries, even before the recent conversion to applied science. (See Fig. 10.)

Is the present concentration upon applied science justified? When the history of the Twentieth Century has been written, it is to be hoped that the United States will have realized the great destiny appropriate to its vast endowment.

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DOWN TO THE SEA

(*Continued from page 404*)

of essential nutritional elements that contribute to good health rather than merely those of specific vital factors. Furthermore, studies in nutrition have also led to a generalization that foods of high-quality protein are usually accompaniel by adequate supplies of vitamins and minerals, and other essential nutrients.

Technological Advances in the Sea Food Industry

From the foregoing, it should now be apparent that fish and other sea foods admirably qualify as a source of highly nutritious foods. From a competitive point of view fish have always been a relatively cheaper source of high-quality food protein than most other foods of animal origin, with the sole exception of milk. Furthermore, their harvest (in the expenditure of necessary man-hours) has always been of a relatively higher productivity than that of any other food staples. However, in many respects, the incidental labor problems have been much more complex.

It has been reliably established that fresh-caught, whole fish, promptly deep-frozen, can be brought to shore, thawed, and processed on conventional processing equipment, to yield a product which is in every way equal to that produced from freshly caught fish. Nevertheless, many economic questions must be answered before such processing can be made completely satisfactory. The most important of these is whether the full benefits of modern technology in food processing can be realized without a substantial increase in price to offset the cost of installing and operating refrigeration equipment aboard ship. The improvement in quality which such practice provides might measurably increase the acceptability of much of the fish and shellfish products presently competing with other frozen animal foods. Unfortunately, the fishing industry has been less quality conscious than other branches of the food industry – and most of the trouble lies in the procurement end. Modern filleting machines provide a striking contrast between the old, inefficient, wasteful, unsanitary practices, and those of present-day processing after the fish are brought to shore. However, inefficient and ineffective handling between the catching of fish and their unloading cannot avoid the consequent loss of quality during the interim. There is nothing any food-processing equipment can do that will upgrade any food product – and sea foods generally deteriorate much more rapidly than most other flesh foods.

In addition to advances in fish preservation and food processing, innovations originating in electronics, biology, chemistry, and other technical aspects are contributing to great changes in the fishing industry. Such electronic devices as echo sounders are coming into wider use for navigation and also for the accurate measurement of depth and density of schools of fish. Electrical fishing lines and the assembly of cod and herring in front of trawl net openings by properly applied electrical currents are among other

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DOWN TO THE SEA

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types of electronic fishing equipment. The development of specially treated synthetic fibers for fish nets has resulted in materially reducing the weights of trawl nets as well as their water resistance, thereby increasing fish-catching yields. Also the use of the proper size nets provides essential conservation measures on fish culture.

The impact of science* is truly "converting the fisheries from primitive operations to those of modern industry." There are many advances to be made before capital, management, labor, and even government begin to catch up with those that have already been contributed by technology. The unreasonableness of labor (resulting in exorbitant insurance premiums and inadequate financial returns to invested capital), the stubborn resistance of management to necessary changes, the timidity of capital, and the almost callous indifference of government have all proven deterring factors that have prevented the fishing industry from attaining its proper stature among the food industries of the nation. However, with the growing realization that our country must husband its high-quality food protein resources in face of the mounting pressure of population, there is every reason to believe that a substantial future awaits those who will meet the challenge with which the fishing industry is now confronted. Such an industry can supply our nation with immense food supplies of the highest nutritional quality; in addition, it can also supply us with new raw materials for both our chemical and pharmaceutical industries. And, inasmuch as such an industry now certainly appears to be one concerned with the production of foods of both animal and vegetable origin, it will truly be a sea food, and not merely a fishing, industry.

In passing, it should not be overlooked that the use of unicellular algae, such as Chlorella,† is presently being studied and seriously considered as a food supplement. Already plankton is being harvested, by new techniques, from zones of high concentration at the edge of the Gulf Stream, for the capital required for harvesting operations is less than that required for growing algae. And the production of algae by industrial methods may eventually prove feasible; the Japanese are already attempting to grow algae on a semicommercial scale.

Dried powders of Chlorella cells give a taste and flavor similar to those of powdered green tea and powdered dry "aonori" – the latter being a seaweed commonly used as a seasoning in Japanese cookery. It has been found that the algal powder can be added to various kinds of food, both Occidental and Oriental, to give them an agreeable taste and appearance, while at the same time enhancing their nutritional value by increasing their protein, fat, and vitamin contents. In

(*Concluded on page 426*)

* Daniel P. Norman, "The Impact of Science in the Fishing Industry," *Monthly Review*, Federal Reserve Bank of Boston, December, 1953, and February, 1954.

† Publication 600, Carnegie Institution of Washington, Washington, D. C. (1953).

DOWN TO THE SEA

(*Concluded from page 424*)

fact, it has been reported‡ that the addition of algal powder has resulted in palatable bread, noodles, ice cream, and soups fortified with it. Also, an acceptable soy sauce has been prepared from Chlorella.

There is truly a boom developing for a sea-food industry composed of those who have the courage and the determination to prepare for it. With all its great potentials, however, if it is to succeed, the sea-food industry must realize that it will need to study its marketing methods as carefully as its production and processing techniques. At least, some of its products will have to be sold to the consuming public by appeals different from those presently in use. But, most of all, the sea-food industry needs a new and refreshing point of view before it can hope to lure the consuming public away from its conventional acceptance of some of the highly competitive products of presently superior quality foods.

In all truth, it most certainly appears that we, as a nation, will find it most advisable to once again go down to the sea in ships – for protein!

INVESTING IN THE FUTURE

(*Concluded from page 405*)

these fields, government funds pay for more than half of research work done, the largest ratio being found in the aircraft industry, where 85 per cent of the research is government sponsored. The other fields of industry, however, pay substantially most of their own way. This is true particularly for the chemical, motor vehicle, petroleum and general machinery (not electrical) fields. In the petroleum field, about 3 per cent of its research is government-paid.

The number of research engineers and scientists reported for the field of motor vehicles and equipment was 1,445; the number engaged on aircraft or parts therefor was 20,235. Overall, industry employs about 1.5 research engineers or scientists per 100 employees, but averages, for specific industries vary far from the norm. In the primary metal industries, the figure is only 0.3, that is about one professional research worker per 300 employees, and it is 0.4 in the automobile field. In the aircraft industry it is 4.3 per 100 employees, and in the case of scientific instruments, other than photographic, the ratio is 3.9 per 100 employees.

‡ *Food Technology*, 8:179-182 (April, 1954).

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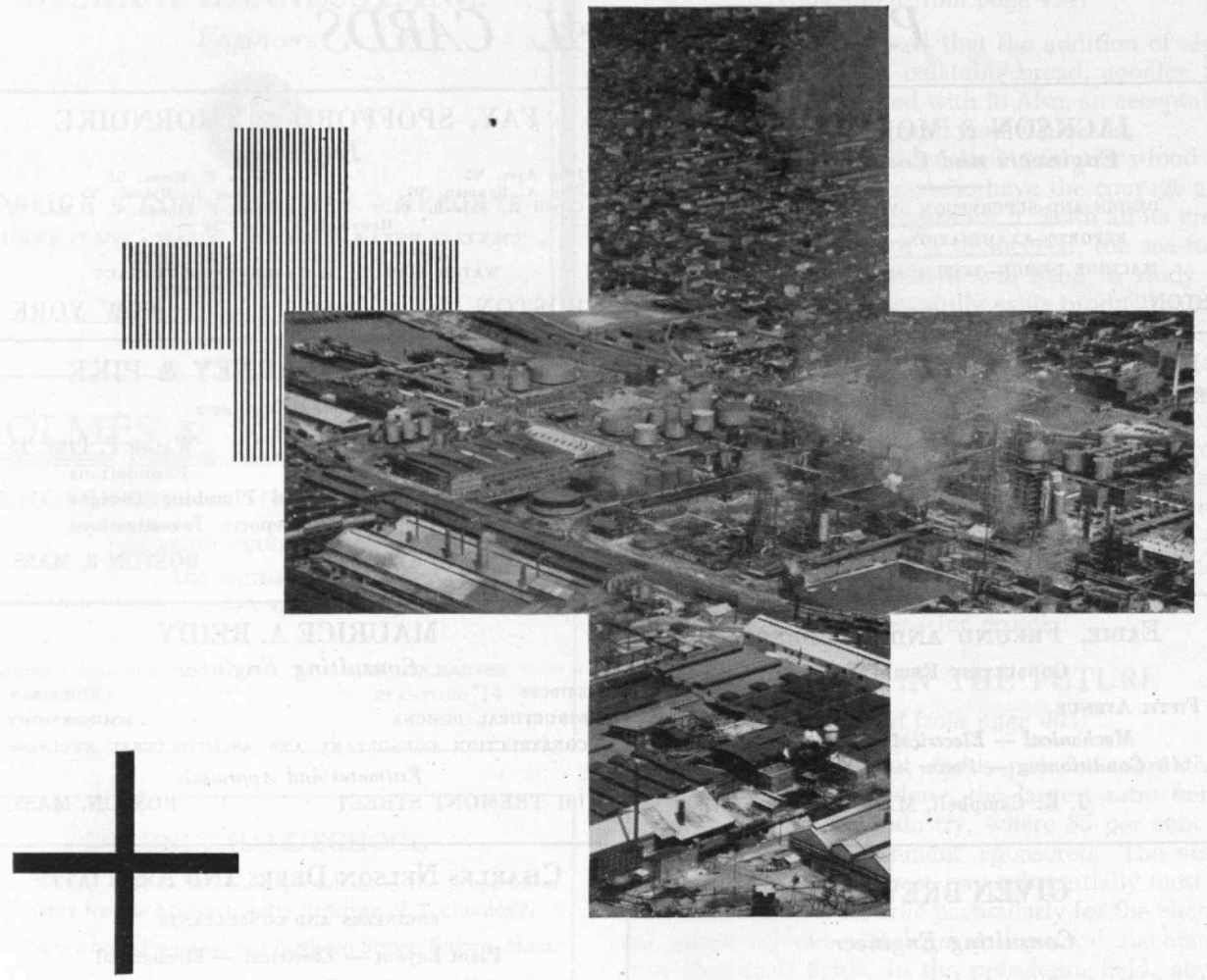

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Alumni AND Officers IN THE News

Elected and Appointed

ALAN K. LAING'26, has been appointed as the chairman of the Department of Architecture at the University of Illinois.

ARNOLD A. ARCHIBALD'28 has been elected vice-president special products and services at Jones-Laughlin Steel Corporation.

ALFONSO TAMMARO'29 has been appointed assistant general manager for research and industrial development for the Atomic Energy Commission. Mr. Tammaro will help direct programs of the Office of Industrial Development and the reactor development, biology and medicine, and research divisions.

ROBERT CLYNE'30 was elected vice-president of the Pressed Steel Car Company.

EDWARD F. ABBOTT'31 was recently appointed general manager of Victory Manufacturing Company.

WALTER C. VOSS'32, former head of the Department of Building Engineering and Construction at M.I.T., has been appointed a consultant to the Department of Defense. Professor Voss will be engaged in reviewing the various types of buildings used by the Armed Forces and will participate in the development of standardized and sound construction practices.

WERNER H. GUMPERTZ'48, Assistant Professor of Building Construction in the Department of Civil and Sanitary Engineering at M.I.T., has been appointed to Committee 332 of the American Concrete Institute. This committee will work on establishing standards for concrete used in residential construction work.

Recognition

VANNEVAR BUSH'16, President of the Carnegie Institution of Washington, was awarded the John J. Carty Medal for noteworthy and distinguished accomplishment at the 91st Annual Meeting of the National Academy of Sciences.

KENNETH T. BAINBRIDGE'25 was awarded the Horace Mann Alumni Award for distinguished achievement. Dr. Bainbridge is a consultant to the National Defense Council, a professor of physics at Harvard University and co-inventor of the mass-spectrograph, an essential instrument used in the weighing of nuclear particles and one of the keys to the use of atomic energy. A leading nuclear physicist, Dr. Bainbridge worked at Los Alamos for more than two years and directed the test in which the first atomic bomb was exploded in this country.

JOHN HAPPEL'30, Professor of Chemical Engineering and Chairman of the Department at the New York University, received the Industrial and Engineering Chemistry Honor Scroll which is presented annually by the American Chemical Society's Division of Industrial and Engineering Chemistry to recognize the reporting of sound scientific work in a clear, interesting manner. Professor Happel is the fourth recipient of the chemistry award.

WILLIAM SHOCKLEY'36 of the Bell Telephone Laboratories was awarded the Comstock Prize for "his pioneering investigations and exposition of electric and magnetic properties of solid materials" by the National Academy of Sciences.

The following members of the M.I.T. Staff were awarded John Simon Guggenheim Memorial Fellowships: WALTER H. STOCKMAYER'35, Professor of Physical Chemistry; HERMAN FESHBACH'42, Associate Professor of Physics; DAVID H. FRISCH'47, Associate Professor of Chemistry; KARL W. DEUTSCH, Professor of History and Political Science; GEORGE F. KOSTER, Lincoln Laboratory; C. C. LIN, Professor of Mathematics; CHARLES G. SWAIN, Associate Professor of Chemistry.

JOHN O. ELY'49, senior research technologist with the field research laboratories of Magnolia Petroleum Company, Dallas, Texas, was named as the winner of Socony-Vacuum Oil Company's 1954 Incentive Fellowship. Magnolia is Socony-Vacuum's Southwest affiliate.

GEORGE SCATCHARD, Professor of Physical Chemistry at the Institute, has been awarded the 1954 Theodore William Richards Medal of the American Chemical Society's Northeastern Section. Dr. Scatchard was cited for his notable researches in the physical chemistry of solutions.

Pen Pushers

LEICESTER F. HAMILTON'14, Professor of Analytical Chemistry, and STEPHEN G. SIMPSON'16, Associate Professor of Analytical Chemistry, both of M.I.T., are the authors of the new Fifth Edition of *Calculations of Analytical Chemistry* (New York: McGraw-Hill Book Company, Inc., 1954).

ASCHER H. SHAPIRO'38, Professor of Mechanical Engineering, M.I.T., is the author of a two-volume set entitled *The Dynamics and Thermodynamics of Compressible Fluid Flow* (New York: Ronald Press Company, 1954, $30.00).

JOHN M. BLUM, Associate Professor of History at the Institute, is the author of a book entitled *The Republican Roosevelt* (Cambridge, Mass.: Harvard University Press, 1954).

Obituary

WALTER C. DAVIS'84, February 1.
PIERRE S. DU PONT'90, April 5.
HAROLD K. BARROWS'95, December 15, 1953.*
CHARLES H. HURD'96, January 4.*
GAYLORD C. HALL'96, March 21.*
HENRY E. WORCESTER'97, April 9.*
A. HARRY PUGH'97, March 25.*
ALBERT W. GRAY'98, March 1.*
WILLIAM S. NEWELL'99, April 19.
RAYMOND D. BORDEN'00, January 26, 1953.
ERNEST E. CLEVELAND'00, March 29.
CYRUS CORLISS'00, April 28.
LAWRENCE S. BUTLER'01, March 26.
JOHN F. MCGANN'01, April 12.*
PHILIP A. POTTER'01, March 11.*
DONALD M. BELCHER'02, April 9.*
ARTHUR F. HARKNESS'02, March 30.*
ELMER M. HERVEY'02, November 10, 1953.
THOMAS W. FOOTE'02, date unknown.
JOHN A. MCKENNA'03, September 27, 1953.*
HARRY A. STILES'03, March 19.*
ANGELINA L. WEEKS'03, January 8.*
WILLIAM H. EDGECOMBE'04, March 12.*
FREDERICK E. GIESECKE'04, June, 1953.
PRESCOTT J. CLAPP'06, March 22.
GEORGE M. HENDERSON'06, February 17.*
HUNTER O. LIGHT'06, April 5.
WALTER N. MUNROE'06, March 24.*
GEORGE R. NORTON'07, April 7.
GEORGE C. LEES'08, April 11.
CLIFFORD H. PRESTON'08, April 14.
WILLIAM J. KEEFE'10, March 16.*
CHARLES A. MAGUIRE'11, March 24.
GEORGE A. UPTON'11, March 24.
L. J. MATAMOROS'12, November 7, 1953.*
HORACE M. LAWRENCE'13, April 6.
LEROY N. BROWN'14, May, 1950.
FREDERICK BERNARD'17, April 1.*
JOHN BACH-WIIG'18, date unknown.
J. LAURIS JONES'18, April 12.
WILLIAM R. MACLEOD'18, February 21.*
DONALD G. MERRILL'18, January 25.*
BRADFORD J. CLARK'20, February 16.*
AUSTIN D. HIGGINS'20, March 19.
J. ERNEST D. CLARKSON'21, February 16.*
CLARENCE H. POWELL'21, May 13, 1951.*
THEON G. ADAMS'23, December 27, 1953.
CHARLES A. BRANTINGHAM'23, March 25.
RAYMOND O. BRINK'23, April 24.*
CLARK BARRETT'23, March 26.
HAROLD B. GOLDING'23.*
FRANKLIN J. GRIFFIN'23, April 4.
DWIGHT W. FORSTER'24, March 31.
JOHN C. BETTS'25, October 15, 1953.
HERBERT E. BUSSOM'25, May 29, 1945.*
ROBERT E. MATTSON'26, March 13.*
PHILLIP E. PINSON'30, March 5.
EDWARD A. HAMACHER'41, March 25.*
HOWARD H. DOWLINK, JR., '43, March.
LEO E. MONKS'47, April 7.
WILLIAM PICK'47, March 9.*
MARK E. SULLIVAN'47, February 19.*
FRANK H. PLUMMER'51, April 1.
CLAUDE P. T. HILL'52, November 25. 1953.

*Mentioned in Class Notes

News FROM THE Clubs AND Classes

CLUB NOTES

M.I.T. Club of Baltimore

On April 1, 1954, Ralph L. Thomas'13 retired from the Consolidated Gas, Electric Light and Power Company of Baltimore where he had been a member of the Board, Vice-president and Executive Engineer. He received his B.S. from Tech in Electrical Engineering after having an A.B. degree from Princeton. Ralph is a Fellow in the American Institute of Electrical Engineers, a member of the American Society of Mechanical Engineers, a member of the Newcomen Society, Phi Beta Kappa, Tau Beta Phi and Kappa Sigma fraternities and a member of the Baltimore Engineer's Club, Princeton Terrace, and L'Hirondelle Clubs. We are indebted to the Gas and Electric Company magazine "Folks" of April, 1954, for these details on Ralph's history. We sincerely hope he will enjoy many years in retirement and look for him to attend our meetings in the future as he has done in the past. If any of you men have news items, be sure to write to RANDOLPH J. PETERSEN'27, *Secretary-Treasurer,* M.I.T. Club of Baltimore, 4007 Deepwood Road, Baltimore 18, Md.

Boston Luncheon Club

The February 17 meeting of the Club was held at the Union Oyster House. Attendance was 56. Laurens Troost, Head of the Department of Naval Architecture, spoke on the experiences of a faculty family as residents of one of the dormitories — Burton House.

There is no Instruction Book for faculty residents, but one point is perfectly clear: They have no part in the maintenance of discipline, for that problem is handled adequately through Student Government, which is developing rapidly. The Institute does feel responsible for educating the whole man, however, and perhaps the resident's chief task is to contribute to this aim by offering an on-the-spot example of a happy domestic circle and a homelike atmosphere to any boy who cares to drop in. The Troosts' experience has been frustrating, except on such holidays as Thanksgiving and Christmas. Many boys have the attitude, "What is there in it for me?" Others are so bashful that it is difficult to draw them out of their shells.

Professor Troost offered the criticism that it is hard for a student to feel that he belongs to a community, when it is as large as Burton House, with its 630 residents, without dining facilities. He believes that the goal should be housing units for not more than 150 to 200 students, each with its own dining facilities, in which a student would live for his entire undergraduate career. Such "Unions" or "Clubs" would offer an exceptional opportunity for Alumni counseling.

The March 18 meeting of the Club was held at the Union Oyster House. Robert L. Johnson'38, Chairman, appointed a Nominating Committee consisting of George W. Smith'26, Donald C. Goss'18 and Samuel Shapira'05 to submit nominations for officers for next year at our meeting on April 15.

A record attendance of 86 was present to hear Dr. James R. Killian, Jr.'26, talk on various new developments at the Institute. Dr. Killian said that 2,000 applications for scholarships have been received from freshmen planning to enter M.I.T. next fall. This number is double the requests of two years ago. There are a variety of reasons for the increase. First, the Institute is receiving more applicants; second, the readjustment in the general business situation is probably a factor; third, more applicants are coming from the Middle West and smaller towns; and fourth, the national competitive scholarships established by the Sloan Foundation have stimulated greater interest in all scholarship aid. Incidentally, these Sloan Scholarships have been a step toward equalizing the situation between technical schools and liberal arts colleges, as the latter had three times as much aid available. The scholarships carry a stipend of up to $2,000 for four years.

The total number of bona fide applicants for admission next September is now in excess of 4,000. This figure is 32 per cent higher than last year and 1953 in turn was about the same percentage over 1952. The increase is encouraging since two or three years ago the Administration at the Institute was worried about the drop that was taking place in applications for technical schools. However, the number is still felt to be inadequate as the lower part of the group is weaker than the Admissions Office would like. From these 4,000 applications, some 800 or 900 freshmen will be selected.

During the last two years the Institute has had a selected group of faculty volunteers, about 30 in number, go on the road to visit secondary schools to tell the story of the breadth of the program now offered at the Institute and to explain the new freshman curriculum, which allows flexibility in taking electives. These faculty members visited over 600 schools last year.

A problem that has been receiving considerable attention is the effort to do a better job in bridging the gap between high school and college. One result has been to reduce the mortality in the freshman class. Of the current class of 840 entering last September, only 30 were dropped for academic reasons at midyear. The total number leaving was 50, which includes those who dropped out for personal reasons. In contrast, as many as 20 per cent flunked out just a few years ago. The Freshmen Advisory Program involving 60 faculty members, each with 10 to 12 freshmen to supervise, together with better selections by the Admissions Office accounts for this improvement. Another interesting phase of this work has been the program suggested by Dean Bowditch of writing to the vocational guidance counselors at the secondary schools and to the parents after the man has been admitted asking frankly what they think of him. The response has been excellent since over 70 per cent of these letters are answered and most contain worthwhile information for building up a good profile of the man. Finally, the idea of using faculty residents in the dormitories has been helpful in disposing of the idea that Tech is a cold, inhuman place. Dr. Killian wants to expand this program by adding three or four additional faculty members to the system.

Another major area which is receiving attention is that of giving the exceptional student advanced standing. Last year, one student received his B.S. in four terms by taking advanced standing examinations. This man is now working on his doctorate. Over the years, Dr. Killian believes that the curriculum will allow more election of subjects and more tailor-made programs.

The new Course XXI, which was suggested by Dean Sherwood, is aimed at attracting more young men of ability who are uncertain of the field that they wish to enter. This is similar to the contents of the combined program with 15 affiliated liberal arts colleges. Under this program now being discussed by the Faculty, one half of the man's time is devoted to science or engineering and one half to the humanities. In the normal course at Tech the humanities have received only 16 per cent to 20 per cent of the student's time. In Course XXI the student can take a general B.S. after four years, but by staying one additional year he can also acquire a specialized or professional B.S. degree. As a matter of fact, at the present time there are about 40 colleges on the waiting list for the Combined Plan now in operation.

Still another new development is the attempt to get away from narrow departmentalization. An example is the Center for International Studies which started in as a research project aimed at avoiding jamming of radio broadcasts to the Iron Curtain countries, but soon developed into a broad study of the whole field of the communication of ideas, and brought social scientists, as well as engineers and natural scientists, into the program. The Ford Foundation has given a grant of $1,000,000. to further the work of the Center. A second example, is Tech's entrance into the field of medical research. A familiar illustration is Professor Trump's work on the treatment of cancer, under the Department of Electrical Engineering. A more recent illustration is a program which has brought the Department of Civil Engineering into research on prosthetics. Yet another example is the application of psychology to electrical engineering for research on acoustics and communications.

In reply to a question, Dr. Killian said that the Institute has about $125,000 to $150,000 available for freshmen scholarship aid for the coming year. In response to another question, he said that the enrollment has now reached a stabilized level, since with the present plant the Institute can handle about 900 in the freshman class and 5,000 to 5,200 in the total student body. — VINCENT T. ESTABROOK '36, *Secretary*, B. Standish Ayer and McKay, Inc., 50 Congress Street, Boston 9, Mass.

M.I.T. Association of Cleveland

The third meeting of the season for the M.I.T. Association of Cleveland was the annual Women's Night meeting, and some 30 members attended, most with their best girls. The meeting took place at the University Club on March 2. That, incidentally, was the night after Cleveland had been blanketed by the first of its two big snowfalls of the first week of March, but the above attendance figures demonstrate that it takes more than 10 inches of snow to deter our hardy membership.

Following the cocktail hour and dinner, President Howard Ferguson'27 announced that the presence of the ladies would not deter him from the usual custom of calling on each person present to identify himself or herself. The girls enthusiastically reported on their respective colleges, offspring (and grandchildren in a few proud cases) and so on.

Our scheduled main speaker, Jack Kennon, chief editorial writer of the Cleveland *News*, found himself in a hospital on that evening, but the other part of the program, films about Mexico provided by American Airlines, more than filled the bill. The films had been arranged through the M.I.T. Club of Mexico City to promote its annual M.I.T. fiesta in Mexico, and after one film on Mexico and a second on Acapulco, it was unanimously agreed that Women's Night next year should be held South of the Border. A film on drop forging was also shown, courtesy of Lew Fykse'41, whose primary objective appeared to be displaying his mastery of erratic motion picture projectors.

It is expected that there will be one more meeting of the Association before the summer. An election of officers will also occur this spring. — WILLIAM M. FOLBERTH, JR.'41, *Secretary*, 2323 E. 67th Street, Cleveland, Ohio; HERBERT J. HANSELL, *Acting Secretary*, 1759 Union Commerce Building, Cleveland, Ohio.

M.I.T. Club of Hartford

The M.I.T. Club of Hartford, Conn., held its third meeting of the 1953–1954 year on April 7. A field trip at 4:30 P.M. to the Kaman Aircraft Corporation, Bloomfield, Conn., attracted about 27 Alumni and we are all most appreciative to Mr. Charles Kaman for making possible this extremely interesting visit.

Dinner was held at Les Shaw's Restaurant, West Hartford, and attended by 32 members of the Club. We were delighted to welcome back Don Severance'38, Alumni Secretary, and Professor Joseph Pechman of the Institute. Professor Pechman presented in a most interesting manner a talk on Federal taxes. The discussion period lasting for over an hour after his talk indicated the lively appreciation for his efforts and his knowledge of the subject.

All Alumni are asked to remember the date of June 9. We hope to have a large crowd at this time at the Avon Country Club to attend our Annual Outing and Meeting. The speaker at the Dinner will be Dr. Paul D. Rosahn, New Britain General Hospital, who will present an illustrated lecture on the Far Eastern situation, particularly with respect to the current problems in Thailand and Indo-China. All Alumni and guests are cordially invited. Members of the M.I.T. Club of Hartford are asked to make a special effort to attend. — CHARLES P. BRITTON'33, 15 Lewis Street, Hartford, Conn.

M.I.T. Association of Japan

The M.I.T. Association of Japan held a small luncheon on February 24 at the Grill Room of the Imperial Hotel. The following Alumni were present: Raymond D. Gladding'15, Y. Chatani'22, Takanao Kuki'29, M. Kametani'25, Theodore Bennett, and the Misses Zeigler and Mayland from the American Embassy.

Mr. Gladding has been at U.N.K.R.A. Tokyo Office for nearly a year and we did not know him until Mr. Kuki notified us on February 22, only to find him leaving Japan the following week. There was no time to call a special meeting and a small luncheon resulted. After the lunch, several snapshots were taken by Mr. Chatani. Then we were all invited to Mr. Bennett's office where he is the chief of the Distribution Section, Motion Picture Branch, American Embassy, to see the film *Men of Science*. Two young ladies from the Embassy at the luncheon took down the narration in shorthand, and I translated it into Japanese. We enjoyed the film very much.

Although the gathering was small, it was very interesting and effective, representing a good combination of visiting Alumni, resident Alumni, and the Embassy group, with the addition of the M.I.T. film. — MASARU KAMETANI'25, *President*, 71 Shimizucho Suginamiku, Japan.

M.I.T. Club of Mexico City

The sixth annual Fiesta of the M.I.T. Club of Mexico City might be briefly and accurately described as eminently successful. To those of us who journeyed down from the States it was a unique and rewarding experience; further, the members of the Club hailed it as, by far, the best to date. To President Manuel S. Vallarta'21, (Mexico's Assistant Minister of Education), and especially to Secretary Clarence M. Cornish'24 and Señora Cornish on whose shoulders fell the major portion of the work, go the thanks of all. They were ably assisted by the chairman of the Gastronomic Committee, Jose de Martino'26; the chairman of the Reception Committee, Pedro Albin'47; Alvino Manzanilla-Arce'31 and Señora Manzanilla-Arce, and many others.

The Fiesta officially began on Thursday, March 11, with a pre-luncheon gathering at the University Club. The men stayed there for lunch, heard from Julius A. Stratton'23, Vice-president and Provost of M.I.T., and H. E. Lobdell'17, Executive Vice-president of the Alumni Association. The ladies left for the Manzanilla's home where they were regaled with a sumptuous luncheon of Yucatán foods, and entertained with songs and dances from that far off part of Mexico. In the evening a meeting at the Palace of Fine Arts heard Dr. Clarke Williams'24, in charge of Nuclear Engineering at the Brookhaven National Laboratories, discuss "Industrial Applications of Atomic Energy." The day ended with a midnight boat ride through the canals of Xochimilco, the famed floating gardens, with a brilliant moon overhead and the music of guitars and Mexican singers.

Friday night the formal banquet was held at the University Club. There were brief talks by three speakers: William P. Snow, Minister Counselor of the American Embassy; Dr. Stratton and Lobby. Among the guests at the head table were Nabor Carrillo, Regent of the University of Mexico, and William W. Buechner'35 of the M.I.T. Faculty, who had received an honorary doctorate from the University of Mexico two days before. The speeches were followed by an outstanding performance of native dances, everything from the Mexican Hat Dance to a spectacular ritual dance of the Aztecs. To those of us from the States it was breath-taking, and the Club members said that many of the dances were entirely new and fresh to them.

The grand finale came on Saturday night with a garden party at the home of Don Carlos Contreras, one of Mexico's foremost architects, panel speaker at the Mid-Century Convocation, and newly-elected honorary member of the Class of 1924. Don Carlos had transformed his garden into a market place with gaily-colored booths serving a great variety of foods and drinks, Indian women cooking tortillas over smoking braziers and marimba players filling the air with music. Many came in colorful native dress and spontaneous dancing broke out everywhere. Center of attraction was a six-foot papier-maché beaver, cardinal with a gray sombrero, suspended from a tree. The high light of the evening came when it was disclosed that he was filled with gifts, M.I.T. version of the usual jug in the famous Mexican game of Piñata. Guests were blindfolded in turn, given a stout stick, and as the beaver danced through the air on the end of a rope they attempted to break him open. He was well built and put up a good fight, but repeated attacks finally wore him down and as the gifts showered to the ground they were gleefully pounced upon.

Among the many other features of this memorable evening were the hot drinks served in specially made pitchers with the wording "M.I.T. Fiesta in Mexico," and small cups identified with "M.I.T. 1954," local equivalent of the M.I.T. stein. These will long remind us of a delightful and colorful climax to a memorable three days. For the visitors and for the Club, our sincere thanks to Don Carlos and Señora Contreras.

These were only the high lights. Not scheduled, but equally a part of the Fiesta, were the visits to the market place

in Toluca, to the shrine at Guadalupe, the San Juan Teotihuacán pyramids of the sun and moon, the silver market and a host of others. Many of those who stayed through Sunday went to the bullfights and saw the outstanding corrida of the season – two matadors being awarded two ears and a tail each, the first such of the season, and the Mexican equivalent of Ted Williams making a grand slam homer in the last of the ninth. Many also went that evening to a farewell party at the home of Señorita Conchita Zambrano, who has since become Mrs. Lobdell.

Herewith a listing of those in attendance including local club members, most of whom were accompanied by their wives:

Visitors from the U.S.A.: H. S. Cleverdon'10, H. K. Franzheim'13, P. P. Gooding'16, M. I. Woythaler'15, W. L. Dennen'17, H. E. Lobdell'17, B. G. Hindes'22, J. A. Stratton'23, Max Ilfeld'24, H. B. Kane'24, Clarke Williams'24 (these, together with the two local club members, had their own "Class of 1924 – Pre-30th Reunion" table); R. J. Joyce'28, R. B. Atkinson'29, G. T. Logan'29, H. B. Mitchell'32, W. W. Buechner'35, P. L. Lichten'43, J. E. Taylor'46.

Local Club members in attendance: G. D. Camp'16, M. Sandoval Vallarta'21, V. Valdes'21, C. M. Cornish'24, T. M. Nevin'24, A. Valdes'25, Jose de Martino'26, L. Avalos Vez'29, S. Madero, Jr.'29, M. Escandon'30, A. Gutierrez'30, E. MacKinney'30, A. Manzanilla'31, L. Chandler'31, R. R. Rosas'33, F. Martinez Gallardo'35, H. Gerard'35, E. Anisz'42, E. Curiel Benfield'43, A. Morales'44, F. Pescador'45, P. Albin'47, C. Braniff'49, J. L. Jones'53. If any appreciable number of the guests who vowed they will be back next year follow through, it will be an overflow gathering.

On behalf of all of us who felt more than adequately repaid for the trip, our sincere thanks to the M.I.T. Club of Mexico City who invited us to attend, and especially to Nish and Luisa Cornish whose long hours of work and detailed planning were everywhere evident. Gracias! – HENRY B. KANE'24, *Guest Secretary*, M.I.T. Club of Mexico City, Room 1-272, M.I.T., Cambridge, Mass.

M.I.T. Club of Milwaukee

Admiral A. G. Noble'23, USN Retired, spoke to the Club at a dinner meeting, Tuesday, April 13, at the University Club. Admiral Noble is a former Chief of Naval Materiel and Executive Vice-president and a Director of the Nordberg Manufacturing Company. Admiral Noble spoke of M.I.T.'s many contributions to the war effort during World War II. He particularly commended M.I.T. because the Institute has not closed "the trap door to its ivory tower," as have many universities, but has continued to contribute to national defense since the war ended. He also cited numerous contributions of M.I.T. alumni to national defense during the same period.

Mr. R. E. Friend, President, and Mr. J. Friend, Vice-president of Nordberg, were guests of Arthur Hall'25 at this meeting and Mr. Wesley Martin of the A. O. Smith Corporation was the guest of E. J. Van Patten'24. Other members who attended were M. P. Allen'13, G. Y. Anderson'24, D. R. E. Barnaby'38, R. H. Becker'22, W. W. Bonns'99, R. B. Greenwalt'51, F. R. Gruner'41, F. E. Hamilton'07, C. E. Hoerig'38, A. E. Jakel, 2-44, M. D. James'27, H. E. Koch'22, J. W. Martin'47, W. Mitchell, Jr., 9-46, J. C. Monday'51, G. W. Pollock'21, F. J. Port, Jr.'40, D. C. Smith'31, Dr. L. D. Smith'06, C. L. Sollenberger, 10-44, E. E. Staples'26, H. H. Valiquet'03. – CHARLES L. SOLLENBERGER, 2–44, *Secretary*, 1030 N. Marshall Street, Milwaukee, Wis.

M.I.T. Club of Northern New Jersey

Some 45 bons vivants of the Club met at the Canoe Brook Country Club in Summit on Thursday, April 8, for a delightfully delicious steak dinner sparked with spirits and spirited good fellowship. Toastmaster for the evening was President Glenn D. Jackson'27, who introduced the two guest speakers: H. E. Lobdell, better known to some of you as Lobby and the former dean of students at Tech, and Frank Leslie, President of Leslie and Company, a New York cotton goods firm.

Lobby, who is now the executive vice-president of the M.I.T. Alumni Association, has visited nearly every M.I.T. Club in the world in the past two years including, among others, those in Belgium, Canada, England, France, and Norway. He just recently returned from a visit to the Mexico City Club. This visit to Mexico City marked an abrupt end to Lobby's membership in Ye Olde Beaver Bachelor's Club, for with graceful equanimity, not only did he get married but he did so twice in a matter of 11 days! It seems that in Mexico the custom is that a couple must have had a civil wedding before they can say their vows in a church ceremony. Consequently, Lobby and his charming wife (she was a vice-president of a Mexico City bank) now have two wedding dates to celebrate at anniversary time: March 18 and March 29, 1954. Glenn Jackson, in behalf of the Club, presented Lobby with a wedding gift of an engraved silver tray.

After commenting briefly on some of the Mexican legal and governmental red tape that was required for him, a foreign visitor, to marry a Mexican citizen, Lobby's talk switched to a different vein; that concerning the activities of the Alumni Association. He said that one of the pressing needs today is for the Institute to have many more contacts with secondary and preparatory schools, and that these should be made by Alumni of the more recent years since the Institute has expanded so much in buildings, equipment, academic work, and personnel in the past 10 years that many of the older Alumni no longer have an intimate knowledge of the facilities on campus. This is the great advantage of the Educational Council, which was organized last year and operates as a sub-unit to the Honorary Secretary group. A large number of the Educational Counsellors are recent graduates who thus have an intimate knowledge of the great new facilities at Tech.

The Institute has gradually grown into a residential college, as it rightly should. With the building of Baker House and the acquisition of the former Riverside Apartments, both on Memorial Drive, the Institute now has dormitory facilities for 2,000, while the fraternities handle an additional 1,750. Hence, with the Westgate facilities, there are living accommodations on campus and in the fraternities for 3,000 out of the 5,000 student body. This compares with the total accommodations for less than 1,000 of the 3,000 student body prior to World War II.

Another of the newer facilities is the beautiful music room in the new Hayden Memorial Library. Actually there are seven private rooms, some with a capacity for about 10 people, where one may listen to selections from the Institute's library of some 40,000 records.

With the money from A. P. Sloan'95 and the Sloan Foundation to found the School of Industrial Management, the Institute purchased Lever House, the former corporate headquarters of Lever Brothers Company, situated on Memorial Drive. The lower floors provide academic facilities while the top floor has been transformed into a Faculty Club including a bar, a main dining room seating about 200, five private dining rooms, one of which seats 60, and several guest rooms for accommodating visiting dignitaries and guests of the Institute.

The number on the Institute payroll is now larger than the student body due to the large degree of sponsored research by government and industry. Tech now has more than 6,000 employees including more than 1,200 on the Faculty.

Concerning the Alumni Association, Lobby said that there are at present about 47,000 names on the list. This includes all those who attended the Institute for one term or more. The Association is organized into two main ways: Chronologically by classes and geographically by clubs. Regarding the latter, there are 69 clubs in the United States, 11 others in the Americas and 10 overseas, making a total of 90 Alumni clubs in the world. Although some of these clubs are inactive, approximately 70 are presently very active.

Among the other facets of Alumni Association activities is the publication of this magazine and the *Alumni Register*, which is compiled and published customarily every fifth year.

Still another function of the Alumni Association is the management of the Alumni Fund. This fund was started in 1940 with the objective of getting small monetary gifts from very many Alumni rather than substantial contributions from just a few. This year there are 8 per cent more contributors than last year with a corresponding increase in the amount of contributions of about $17,000 to $18,000. The fund this year should amount to over $215,000. These monies have been used to help the Institute in its development and expansion, such as the gift to the Institute of the Alumni Swimming Pool in 1940, for dormitories, and so on.

Mr. Frank Leslie, the guest speaker, spoke humorously of some of the many facets to the textile manufacturing industry. He said that years ago textile mills were run more by feeling than by logic and that the operators, called Overseers, had come up from the ranks. Thus they

had an extreme distaste for college trained men such as engineers. However, in the last 10 to 15 years the industry has become more professional, and the mills now use engineers more as a rule rather than as an exception. Mr. Leslie illustrated his talk with some rather humorous stories and anecdotes, which from the amount of laughter, appeared to be greatly appreciated by the audience.

Although this spring meeting was supposed to combine an afternoon of golf and tennis with the evening dinner meeting, only one stalwart soul showed up for golf and none for tennis. In presenting Fletcher Thornton with a simulated commendation ribbon for his lone appearance on the links, Russell E. Lowe'16 remarked that such "resolute courage, indefatigable fighting spirit and inexorable devotion to duty was in keeping with the highest traditions of the Institute and its Alumni."

The end of another successful Club year, which is fast approaching, means that election time is also here. Consequently, the following named men were appointed as a nominating committee by President Jackson to select a slate of officers for next year and present it to the Club for voting at the next meeting. Those appointed were Newton Foster'28, Chairman; G. C. Paulsen, Jr.'40; Lem Tremaine'23; Donald D. Way'19; and John T. Reid'48.

Treasurer Joe Wenick'21 presented the following statistics in a brief report to the Club. The Club has 254 members this year as compared to 175 last year. On the financial side, the cash on hand now stands at $1,256 as compared to $1,046 at this time last year.

The last meeting of the Club for the current year is scheduled for Tuesday evening, May 25, at the Hotel Suburban in Summit. — Russell P. Westerhoff'27, *Secretary*, 823 East 23rd Street, Paterson, N.J. John T. Reid'48, *Assistant Secretary*, 80 Renshaw Avenue, East Orange, N.J.

M.I.T. Club of Schenectady

Seven hundred dollars of free education: that amount over and above scholarships is about what M.I.T. endowment contributes every year to each student, according to Dean Pitre, who spoke at our perennial dinner meeting on Tuesday evening, February 9. The Dean of Student Aid stated that the cost per year per student is about $1,600 while the tuition is only $900.

The mixed group with about 30 Alumni, meeting at the Danish Hall in uptown Schenectady, enjoyed first an excellent self-service roast beef dinner arranged by Bud Wilson, and his energetic wife. White chrysanthemum corsages were provided for the ladies and all wore informal name tags. This established a congenial atmosphere further heightened by the light-hearted discourse on science and creativity presented by Ray Homan'49. Ray brought along a few "samples" ranging from bouncing putty to an electrostatic radiation counter. The hot personality meter (in bread board form) brought on some comedy. By clutching a thermocouple this curious device translated the hand temperature to the light intensity of a 200 watt bulb. Fred Barrett, Jr.'34, and myself exhibited medium warm personalities by brightening the lamp nicely. Ed Lawrence'47 was exposed as devoid of personality (newly married, too) as he clutched the thermocouple; the lamp went dead! (I wondered why Ed asked for extra ice from my glass of water. Could it be? Ray, you sly dog!)

At the conclusion of Ray's very E.P. (Effective Presentation) talk, Dean Pitre discussed the major changes at M.I.T. over the past 25 years. He established four of these as (1) Internationalizing student enrollment. (In 1930 18 per cent of the students were from areas outside the Northeast. Now some 39 per cent come from homes in these states.) (2) Development of M.I.T. as a resident engineering and scientific institution. (About three quarters of the students are now housed in institute dorms and apartments.) (3) Gradual movement of fraternities into Institute housing. (This is not now under way but as Westgate and Westgate West are abandoned [in four to eight years] fraternities will probably be established in those areas.) (4) Increase in the costs of education. Coupled with this are the greater amounts of student aid in the form of scholarships, loans, and part time work. To meet the $8,000 bill for the four undergraduate years, greater proportions of the enrolled students feel the need for financial help. Experiments with freshmen working part time are under way and to date they appear successful if selectivity is carried out in assigning jobs.

At the conclusion of his remarks, the Dean showed and discussed some 50 colored slides of M.I.T. life which depict the balance of qualitative and quantitative aspects of college living or, the social and cultural aspects as compared to the scientific and practical aspects. Dean Pitre emphasized that this has been a goal in recent years.

The dinner meeting and Dean Pitre's visit were beautifully arranged by an assorted committee including Bud Wilson, John MacLeod'34 (our esteemed President), Ray Homan, Andy Kellogg'24 (our new Honorary Secretary) and Jack Acton'50, who was vacationing in Miami with his family and so missed the jovial night. Andy Kellogg was recently appointed the Honorary Secretary of this area after C. J. Koch'23 passed on. We were also saddened to lose another of our staunch M.I.T. men and cheerful, enthusiastic personalities when K. P. Coachman'22 succumbed. We salute both of these men as leaders in their contributions to education and civic life.

We are assured of good news coverage on our activities now. Andy Kellogg is the voice of the Schenectady *Union-Star*. He has attacked the honorary secretarial work involving the arduous task of interviewing and evaluating the many applicants to M.I.T. from this area with energy. This is a real burden to carry and the area Club will co-operate fully with him in whatever way he feels will be most useful.

Among the diners at the winter evening meeting on February 9 were the following: Admiral and Mrs. Kitts (the Admiral'22 is our zealous expert on area and national waterways. Last year he arranged a well-discussed club talk on the St. Lawrence Seaway and this year he has planned the meeting on the New York State waterways with background on the Erie Canal); Professor Harold Bibber'20 (our consultant on city affairs; he has arranged a meeting this year on the cultural life of Schenectady and its traffic control problems); Ed Lawrence and his wife (old hands at M.I.T. affairs); L. G. Peterson'36 (a family man with a brand new daughter to make life complete after the first two boys); John Eshbach'51 (our skier and researcher at G.E.'s Knolls Research Laboratory); Burt Angell'43 (on a visit); Dick Mathews'50 and date Marion Hallett (Dick and Dean Pitre renewed an old acquaintance); Don and Janice Smith'50, Fred Barrett, Jr. (who manages the "dough"), Ray Homan's date, Anne Merrill, and Didi MacLeod, John's wife.

Did I miss somebody? Well, we wished for more out there but 'twas lots of fun as was. Come on out, readers. Every month on the second Tuesday noon we meet at Ferro's Restaurant on Barrett Street. At luncheon we have a speaker to discuss some topic of general interest. This year our theme is Schenectady. We have discussed (with some heat as well as light) the cultural life in this city (October), Engineering Services (November), County Government Services (December), Traffic Control (January), and Transportation, Waterways, and Thruways at our recent March meeting. Of course, as tradition holds, the June steak roast will wrap up the year with a bang. We urge everyone to try to attend this meeting and enjoy an evening of good food and good fellowship with other M.I.T. Alumni. — John R. M. Alger'49, *Secretary*, 16 Washington Avenue, Schenectady 5, N.Y.

M. I. T. Club of Southern California

Alumni who have attended recent meetings have had the pleasure of meeting the charming wife of our Program Chairman, Mrs. Robert Hiller. She was named "Woman of the Year" by the Women's Council of Burbank. Last year she was County "Mother of the Year." Mesdames Banks, Barner, Barton, Bates, Goldstein, Heitschmidt, Holmes, Lowndes, Lunden, MacCallum, Marlow, McCool, Stewart and Stringfield were at the March 24 meeting in the Music Room of the Biltmore.

John E. Burchard'23, M.I.T. Dean of Humanities, brought the greeting of President Killian'26 and the news of many changes in the offices of the six deans who addressed the meeting here of about a year ago. Cochrane has gone to External Affairs, Belluschi to Rome. The many roads which could be followed in planning a curriculum for students were explored with a question mark at the end of each and the remark "Hutchins knows, I don't." Students must learn sometime to read and write so that others can understand quickly whatever the student wishes to give out. But in general in a college they should learn under their own initiative as by physical experiments. The Humanities Department receives about 10 per cent of the budget and does about 16 per cent of work, as very little costly apparatus or material is used.

From the funds received by the Institute for research and used in payment of

salaries, about half the time is on the instruction of undergraduates and the other half is controlled as regards goals by the research planned. The liberal arts college at M.I.T. has a larger percentage of post graduate students due to the high standing of the Economics Department.

The intent is to give two years of general training with the object to inspire the student in the last two years to plan some individual work of his own. Generally those with good standings the first two years weather the last two.

The Ford Foundation, in which Clark Millikan is working, is helping greatly in International Studies. Three lines are studied: (1) Our Enemies – The Dynamics of Society in Russia. (2) Problems of Our Friends – Now China Whither? (3) How the World Works – How Russia Took Over Its Satellites – Step by Step.

James T. Holmes'14 explained the Holmes and Narver $10,000 Scholarship. H. Royce Greatwood'25, was welcomed after returning from three years in Japan and around 30 years in the Near East.

Among those present were Zenas M. Briggs'00, K. C. Grant'02, George H. Clapp'03, Hiram E. Beebe'10, Harold S. Johnson'12, James T. Holmes'14, Raymond B. Stringfield and Robert Welles'15, Samuel E. Lunden'21, F. Marion Banks and E. T. Heitschmidt'22, L. W. Powers and William L. Stewart'23, Philip K. Bates, Homer S. Davis, William MacCallum and H. Royce Greatwood'25, Frederick W. Grantham'25, George M. Cunningham'27, Arthur B. Marlow and Harry Shoemaker'29, Robert E. Hiller'31, John M. Andreas'37, Jack Rosenberg'38, Harold H. Strauss'38, James S. Cullison '41, Jerald O. Johnson'44, Allen Goldstein and Alvin A. Markus'47, Donald E. McCool and Joseph F. Mullen'53.

The friends of George Cunningham'27 will be pleased to know that the Pacific Coast Sales Office of the Mathiesen Chemical Company has been moved from San Francisco to Los Angeles giving George as District Sales Manager more time in this area.

The high light of the year for those whose names appear on the Club letterhead was about two months ago – a party and work session at the beach home of President William MacCallum'24, at Corona Del Mar, with the wives included in the very pleasant all day party. Kenneth C. Kingsley'27 as Honorary Secretary reported on the high quality of the prospective students from this area. Constance and Ford Sammis'29 and '28, added to the discussion on the coming year's events in our Club. Among those enjoying the hospitality of the MacCallums were: Hiram E. Beebe'10, Samuel E. Lunden'21, Phillip K. Bates'24, Kenneth B. Kingsley'25, Frederick W. Grantham'25, George M. Cunningham'27, Ford Sammis'28, Arthur B. Marlow'29, Robert E. Hiller'31, Harold H. Strauss'38, James S. Cullison'41, John D. Goldson'47, and Page E. Golsan, Jr.'34.

All Tech men are urged to get in touch with Hiller as some most interesting meetings and inspection trips have been planned for the summer. – HIRAM E. BEEBE'10, *Review Correspondent*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

CLASS NOTES

• 1893 •

The classmates of Frederic H. Keyes will be interested to hear that his office associates at M.I.T. gave a luncheon in his honor on March 29, at the Faculty Club.

Among the 65 present were Mr. Keyes' daughter Nancy, Nathaniel McL. Sage'13, Dr. Foster, Samuel C. Prescott'94, Gordon B. Wilkes'11, Donald P. Severance'38, Mrs. Evelyn Yates and Mrs. Mary Howe from the Placement Office, and many from the Accounting Department and D.I.C. headquarters.

A scroll, signed by those present, and a gift of M.I.T. Wedgewood plates were presented to Mr. Keyes at the luncheon, on the occasion of his retirement.

Fred Keyes will be greatly missed by his associates. He has the best wishes of all as he leaves for the West Coast where he will make his home with his daughter. His new address is: 3021 West Mercer Way, Mercer Island, Wash. – GERTRUDE B. CURRIE, *Acting Secretary*, 11 Beacon Street, Boston 8, Mass.

• 1895 •

It becomes a trying task at times for your Secretary to report the passing of intimate classmates. There are not too many of us left after graduation – 59 years ago – but those still living are always interested in the doings and whereabouts of one another.

Harold Kilbrith Barrows, Course I, passed on December 15, 1953. He was one of the old New England stock, a direct descendant of John Barrows who settled in Salem in 1637. Born in Melrose, Mass., in 1873, his early education was at the Reading High School previous to his entering Technology. During 1895-1896 he served as assistant in the Civil Engineering Department of the Institute, after which he spent three years as assistant in the City Engineer's office in Newton, Mass. From 1899 to 1901 he was a designer with the Metropolitan Water Board in Boston, working on the design of the Wachusett Dam and the Weston Aqueduct. From 1901-1904 he was assistant professor and associate professor of Civil Engineering at the University of Vermont at Burlington.

From 1904 to 1909 he was District Engineer of the Water Resources Branch of the U.S. Geological Survey, having New England as a district and later including New York. In 1907 he opened his office at 6 Beacon Street, Boston, as Consulting Hydraulic Engineer specializing in water power, water supply works, and flood control. In these fields of service he contacted numerous state public utilities and power commissions, and many municipalities and corporations. After opening his office in Boston, he became associate professor of Hydraulic Engineering at M.I.T., being promoted to professor in 1921, and serving as professor until 1941, when he became emeritus professor. While at the Institute he was in charge of the hydroelectric option in Civil Engineering. He was the author of *Water Power Engineering*, which ran to three editions and is in use in some 30 colleges and technical schools in the United States and abroad. He also wrote *Floods – Their Hydraulogy and Control*, and was the author of many professional papers on hydraulics, power, flood control, and water supply. He contributed numerous articles to the *Dictionary of American Biography*.

Professor Barrows was regional consultant of the National Resources Commission from 1934 to 1941, and was a member and consultant of the Advisory Committee on Flood Control for the State of Vermont. He was consultant for the TVA on Water Power Valuation and umpire on the Arbitration Board of the International Joint Commission (United States and Canada) from 1939 to 1942.

Advisory engineer of the New England District of the RFC in 1932 and 1933, he was also a consultant and witness in the United States Supreme Court Case of New Jersey vs. New York on the Delaware River Diversion in 1929 and 1930. Many states throughout the country have received his reports on flood control. He was a member of the American Society of Civil Engineers, having been past president of the New England Section; member and past president of the Boston Society of Civil Engineers; member of the American Institute of Consulting Engineers, and New England Water Works Association; a Fellow of the American Academy of Arts and Sciences; honorary member of Chi Epsilon and a member of the Monday Club of Winchester, Mass. He went to Winchester in 1907 where he lived until his passing. He served as chairman of the Water and Sewer Board from 1913 to 1916 and was a member of many of the town committees. He was an active member of the Standing Committee of the Unitarian Church. His club membership included the Calumet Club; Winchester Country Club; and the Siaconnet Golf Club of Little Compton, R.I. Flags on the Common and Town Buildings were displayed at half-mast in honor of his many services to the Town of Winchester. There are two survivors in his family; a son, Kilbrith J. Barrows, of Winchester, a lecturer in International Relations; and a brother, Herbert Barrows of Wilmington, Mass. Mrs. Barrows passed away a year ago. – LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

With this issue of the Review please find class plans for Alumni Day at M.I.T. We hope our Class will be well represented. We have reserved a suite at the Hotel Statler for the afternoon and evening of the annual dinner, which is June 14. There is no fixed program for those of us who foregather, but a cocktail hour will be observed from five o'clock on. You will find notice in the front lobby of the room reservation with the number.

Our last Review contained a notice regarding Gaylord C. Hall. We have since received notice of his death on March 21. We will receive more material regarding his passing. We also report the death of Charles H. Hurd, on January 4, 1954.

Last week brought a very welcome letter from R. E. Bakenhus who wished to be remembered to any of his classmates we might run into. He also said that he had recently talked by phone with Charlie Trout who is retiring from business in October. He advised Charlie not to stop working, and Charlie replied that a friend of his had advised him to run a peanut stand. He is well, as is evident by his letter regarding the New York '96 Class Dinner on February 26:

"Dear John, The dinner was my idea of a complete success. There were more out than I expected. I will give you the correct announcement of my honors if and when I get them. I have been suggested as an honorary member of the American Society of Civil Engineers. There are some 30 other suggestions and I think four vacancies. You may figure my chances. The Class has done pretty well in the A.S.C.E. for directors, one vice-president, two honorary members, Hyde and McAlpin, and I have been treasurer since 1941. That is not as important a job as it sounds but is one point for the Class anyway. I will retire from business on October 1 at the tender age of almost 83. I haven't the least idea what I'll do then but you may count on me at any future class meetings if I don't get too far away. Good luck, Charlie."

We were pleased to hear from J. McIlvaine this week. Seems to be in excellent health and wished to be remembered, especially to Ralph Henry. He very thoughtfully enclosed a check for our Alumni Fund. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Commander Hotel, Cambridge 38, Mass.

• 1897 •

It is with the deepest sorrow and regret that we must report the passing of two more of our classmates, Achilles H. Pugh and Henry E. Worcester. Harry Pugh died on March 25 after an illness of over three years. A native of Cincinnati, Mr. Pugh was graduated from the Institute and joined his father in the printing business. He assumed control of the Pugh Printing Company when his father died in 1912. In World War I, Mr. Pugh was head of the loading and explosive section, Cincinnati Ordnance District. After the war, he served on the Claims Board, which settled terminated contracts totaling 100 million dollars.

He was active in forming the Army Ordnance Association in the United States and held several offices in the Cincinnati post. He held the rank of honorary colonel in the Officers Reserve Corps.

Mr. Pugh held membership in the Queen City Club, the Cincinnati Country Club, the University Club, the Engineer's Club, the Engineering Club of Cincinnati, and the Cincinnati Tennis Club. He was a very accomplished and well-known ice skater and roller skater.

Henry Worcester, retired, former vice-president of the Revere Sugar Refinery Company, died suddenly on April 9. Your Secretary was out of circulation the week of April 5 and thus was not aware of Mr. Worcester's passing until the following week; hence this brief notice. We hope to give more extensive details later.

In the meantime, the Class extends its deepest sympathy to the families of the deceased members in their loss. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

• 1898 •

Our "foot-loose and fancy free" Secretary is still exploring the wonders of the South and West and is expected back in Boston in May. He is so busy, so enthralled by the beauties and wonders of our great country that he gets no time for cards, itineraries or correspondence. What a wealth of knowledge he will soon be able to lay before us. So don't miss Commencement or class meetings after you read these notes.

And our President Dan Edgerly returned to New York on April 7 from a Mediterranean trip making 23 ports of call. The high spot of this trip was when he met Gorham P. Stevens, Dan's boyhood friend in Cambridge, whom he hadn't seen in 55 years, so you may imagine what a jolly reunion this was.

Gorham Stevens, Course IV, has long been head of American Archeological research in Rome and Greece and he personally conducted Dan through the newest research projects in Athens. We shall receive a more detailed account of this trip in a special presidential letter.

Arthur A. Blanchard and his wife have spent the winter at Lake Wales, Fla., and will soon return to Brookline and Marshfield. The Chapins and Sam Prescott called on them in January.

C. E. A. Winslow is still active and in demand as a speaker. He is thus commended by the New Haven Sunday *Register*, "Dr. Winslow, Professor Emeritus of Public Health at Yale University, retired from the Yale Faculty in 1945, after 30 years of distinguished service. He was the founder of the Yale Department of Health and served as its chairman from 1915 to 1945. Prominent in international health work, Dr. Winslow worked with the health section of the League of Nations, and more recently with the World Health Organization. In May 1952 he received the Leon Bernard Foundation Prize at a conference of 70 nations at Geneva, Switzerland."

Our classmate, Albert W. Gray's death is reported in the Hartford *Times*, March 2, age 79. "Mr. Gray was retired board chairman of the Hartford Electric Steel Corporation and assistant to the president of the Hartford Electric Light Company. He was born in Boston, Dec. 27, 1874, and was graduated from Boston English School and M.I.T."

Edgar W. Norton, Shrewsbury, Mass., was written up in Worcester Sunday *Telegram* as follows: "Most of us, when we see the Boys Trade High School, the County Courthouse, the free public Library, or even the City Hall in Worcester, think of them just as impressive old landmarks, familiar in their solid dignity. To Edgar W. Norton of Shrewsbury, however, these buildings mean much more. To him, after 60 years in the building world, they represent many hours over drawing boards, and so on. In the early '90s his employers were Norcross Brothers followed by courses at M.I.T. as a special student. He is now writing a book on North American Indians." We wish him the best of happiness and should like to see him at Commencement or at a class meeting. I remember him well although he was only with us part of four years.

George T. Cottle and the Assistant Secretary attended the March and April meetings of the M.I.T. Alumni Luncheon Club, to hear late developments at Tech. President Killian spoke at the March meeting on new developments in the undergraduate school explaining new methods of admitting freshmen and advising them in their freshman year. From several thousand applicants they choose about 900 of the most promising. Each student is assigned to an adviser who keeps in close touch with him, and in each dormitory the resident faculty member also acts as special adviser. Under this system only 33 freshmen failed out of 900.

At the April 15 luncheon Mr. Bowditch explained the new M.I.T. activities designed to develop the students in all educational, social and business lines to make a "whole man." As an aid in this work Tech is now building two new buildings in a quadrangle west of Massachusetts Avenue.

One building will house musical and dramatic clubs on the lower floor, and the upper floor will be an auditorium seating 1,200. The second building is a chapel seating 125, adaptable for meetings of all faiths. This is partly in response to student requests for courses in Bible and religious training. Here is an interesting new venture in education at Tech which we shall be glad to see at Commencement. — E. R. BARKER, *Assistant Secretary*, 20 Lombard Road, Arlington, Mass.

• 1899 •

Norman E. Seavey has discovered how to have eternal summer. He winters in Orlando, Fla., then comes North to Milton, N.H. Thus he has naturally developed many outdoor hobbies, including gardening, color photography and travel; a wise way to spend the autumn years. Perhaps he got enough of cold weather when he spent two years after graduation as assistant in the Physics Laboratory at Tech, then went to the Minneapolis General Electric Company for six years and thence to Dover, N.H., for 37 years in the wholesale and retail hardware business, retiring in 1944. Among other civic activities he was for 20 years a member of the local school Board. As a Rotarian for 30 years he has rotated to international conventions at Nice, Paris, and Rio de Janeiro. Norman and his wife are baby sitters for their daughter, Eleanor. Bobbie is three and Barbara Ann is one year old.

Found at last. One woman who is willing to tell her age. Henrietta L. Graves writes that she cannot come to the 55th class reunion because she is 91 years old, but adds that she "is still on her feet." Further evidence that she is younger than some other members of the Class with some 13 fewer years on their heads is evidenced by a clipping from the Lewiston-Auburn, Me., *Republican* of September 1952 showing a picture of her in her vege-

table garden. She retired in 1923 after many years of teaching physiology and hygiene. Evidently she has "practiced what she preached."

William S. Newell, Chairman of the Board of the Bath (Me.) Iron Works, died in the Bath Memorial Hospital on Sunday, April 19, according to the New York City newspapers. A more detailed account of his remarkable career will appear in the July Review. — BURT R. RICKARDS, *Secretary,* 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary,* 1793 Beacon Street, Brookline 16, Mass.

• 1901 •

It is with deep regret that I begin the notes for this month by reporting the death of Phil Potter of Ho-Ho-Kus, N.J., on March 11. He sent me an interesting reply to the Class Letter on February 3 and offered to have his class picture copied for Greta Gray. I wrote him to do so by all means. On March 18 I received a letter from a Mr. Feingold, an associate of Phil's in the engineering firm for which he worked, enclosing two copies of the picture and the negative. He said that Phil telephoned him only two or three days before he died and asked him to make the copies. I wrote Mr. Feingold thanking him for his kindness.

I also wrote to Phil's family and received a very nice note from his daughter enclosing a clipping from which I quote. "Philip A. Potter of 156 Sheridan Avenue, Ho-Ho-Kus, a former president of the Ho-Ho-Kus School Board for nearly 25 years, died suddenly of a heart attack in his home Thursday morning. He had been subject to a heart ailment for over a year but continued active in business until the end. His age was 76.

"Mr. Potter was born in Palmer, Mass., and spent the greater part of his life in this area. After graduating from M.I.T., he went with the Bethlehem Steel Corporation and prior to World War I joined the Nicholas S. Hill Company which later became Buck, Seifert and Jost, New York consulting engineers. He subsequently became owner of the Meridien Steamship Company and the Crown Shield Trading Corporation, exporters and importers in New York, both concerns working in conjunction with each other. He held this joint ownership position until 1930. Mr. Potter then went with the Hackensack Water Company by which he was employed as an engineer for about 10 years, and then hydraulic and sanitary engineer for the Public Utilities Commission of New Jersey. On retiring about a year and a half ago, he went back to Buck, Seifert and Jost as an associate consulting engineer, continuing with them until his death. He was also active in politics, serving as a Republican county committeeman for a number of years. He was a senior warden and a vestryman of St. Bartholomew's Church in Ho-Ho-Kus. His wife died in 1930. He is survived by one son, two daughters and eight grandchildren."

Thanks to the kindness of Phil Potter and his associate, I was able to send copies of the picture to Greta Gray and Nat Patch. I have received very appreciative letters from each of them and I am glad that we could finally succeed in the undertaking. An interesting reply from Charles Auer, III, in El Paso, Texas, reads as follows: "Mrs. Auer and I are now great-grandparents. The young lady's name is Ellen Gay Borschow and due to my insistence and in memory of Mrs. Ellen Richards, late wife of our beloved late Professor Robert H. Richards, she will be called "Ellen." The four generations are Charles I. Auer, Mrs. Nathan Borschow (my daughter), Irving I. Borschow (my grandson) and Ellen Gay Borschow (my great-granddaughter). Dr. B. A. Thresher, when here recently, told me that I am the oldest living Honorary Secretary of M.I.T. I now have an able associate in A. A. Brown, General Manager for the Mining Department of Mexico for the American Smelting and Refining Company. I have been Honorary Secretary for 20 or more years and have assisted students who have been a credit to the Institute. I hope that next September I can celebrate my diamond birthday anniversary. This coming November Mrs. Auer and I will have been married 49 years and with God's willingness we are looking forward to celebrating our Golden Anniversary in November 1955."

Donald Kohr, V, writes that he has not retired and is still serving the Lowe Brothers Company for the 52nd year. An interesting letter from Roger Wight says that he is still in the real estate business in Harwich Port. He hoped to make a trip to Florida this winter but business prevented. He may go later with the possible thought of buying a small place there if he can satisfactorily dispose of his place on Cape Cod. He is treasurer of his church which helps to keep him busy.

Carl Johnson, in Nevada, sends one of his interesting communications. He says: "I have looked for physical evidence of greatness either in my past or present life but careful search has failed to detect any sprouting wings which might carry to the heights of history even the mention of my name. Where then can my prattle do more than provide an opportunity for my fellow classmates to justly congratulate themselves on meritorious achievements which have been and are still being theirs. True, there may be several achievements which may have missed their observation though not necessarily involved in the tremendous education I received at M.I.T. and among these I still swear in spite of tremendous clerical and other obstacles I have been forced to surmount. Moreover, I quit smoking cigarettes in spite of the TV programs to excite my indulgence in Scratch-free pleasure, a must in every happy man's life. Be all this as it may, and that isn't much, our genial Secretary Professor Taft is a hard working and expectant mother of the Class of 1901, so deliver the necessary information he asks for, for class reports. There is no use in our thumbing through the pages of the Review to find out where in the deuce you have been all these years and when you are coming up with something about yourself. If it's only a sense of humor, that is better than clamming away the few years we have left."

Bill Farnham reports that he is following his usual routine — Pinehurst, Wentworth-by-the-Sea and East Orange. He says: "Find enough to do every day to keep busy. I really enjoy reading during my spare moments. My health has been and is good for which I am most thankful." A good word comes from our old friend Jack Scully in Las Vegas, Nevada. He reports: "Had my 75th birthday Oct. 26, 1953. Still going strong. Doing light work (house and office). Not involved in any murders or scandal. Eligible for baby-sitting or ski jumping." I was very sorry to read in a Boston paper this week the death of our classmate, John McGann, on April 12. It is very sad to see our friends slipping away one by one. I will try and have more about John next month. The word "except" in the Class Letter which should have been "expect" was the printer's mistake, not mine. — THEODORE H. TAFT, *Secretary,* Box 124, East Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary,* 287 Oakland St., Wellesley Hills 82, Mass.

• 1902 •

A letter from Les Millar says, "I can now report that the ulcers on my legs have cleared up and I am in pretty good shape except that the Doc has tied me down on stair climbing to once a day and has limited me to four cigarettes per day and no salt. Outside of that I am all right. I am not doing a thing except household repair jobs. As you know, this is a suburb of Detroit and, according to Detroit custom, just rotates around that city. All they think of is the auto business and now that is dead. They are moving heaven and earth to sell cars and what transpires otherwise does not matter. So I watch the show and wonder how long it will keep up. They have no use for anybody over 30 years. It is a young man's town."

From Lombard, Pasadena, Calif., we have received a clipping from the *Star-News* describing the gift of a planer to the Boys' Club in memory of Walter Putnam. To quote — "Relatives and friends of the late Walter Putnam, former superintendent of Pasadena Building Department, last week dedicated to his memory a new four foot by thirteen foot Delta Thickness Planer at the Boys' Club of Pasadena. A simple plaque, conspicuously placed on the machine, expressed the feeling of the group by reading, 'Because Walter Putnam believed in boys, this planer is given the Boys' Club of Pasadena as a tribute to him by his relatives and friends.' The plaque was designed and produced by Harold L. Dolittle, Mrs. Putnam's brother-in-law." It was also announced that Mrs. Putnam was making much of Putnam's telescopic equipment available for the Club's astronomical projects.

Louis Cates has been admitted to the Legion of Honor roll of those who have been members of the American Institute of Mining and Metallurgical Engineers for 50 years. This honor was conferred at the Annual Meeting of the A.I.M.E. last February.

Under date of April 2, Dan Patch writes: "I had lunch with Professor Harold Everett this noon. To me it was the answer to a maiden's prayer. I was recently started on a reminiscent jag by a letter from Miss Weld out in Carmel, Calif. She had asked me about something which had happened while she was an under-

graduate and I had written to Steve Gardner to check my answer. Among the things which came to my mind, stirred by this reference to student days in Course XIII, was a trip I had on a steam yacht which was a converted America Cup sailing yacht.

"From Pete Newell I learned it was the *Pilgrim*, owned by Frank McQuesten. Because I linked Harold Everett with McQuesten, I decided that trip had something to do with Harold's thesis. I went over to M.I.T. Library and found his thesis was about progressive speed trials on the steam yacht, *Pilgrim*. I read the thesis but still had some things I wanted to clear up. And here comes Harold on a visit to his sister in Wellesley and I get him to come in for lunch and we talk the whole event over. I told Harold that if he had come a year or two ago I could have had several '02 men to lunch with him but now so many were retired that I could not raise anyone.

"Harold is looking fine and renewing his youth on the campus at Penn State through a grandson who is now a freshman. We reanimated most of the Course XII folks as well as other classmates, professors, and instructors. I think if I were a retired man and footloose I would like to drift about the country interviewing '02 men.

"I can thank Harold for giving me the chance of being a millionaire for a day. The old *Pilgrim*, which was eliminated in the trials, had her fin keel cut back to about six inches and had a couple compound engines, which had been taken from the burned *Watertown* and reconditioned, installed. She was not designed for power and her trial showed it but she had all the makings of a swell yacht and those of us who helped to indicate the engines, take bearings and read the taffrail log had a grand outing on that June day in 1901."

Once again the passing of classmates must be recorded. Arthur F. Harkness, Course V, died on March 30. He had long been a chemist with the Kendall Company in Walpole, having been with the Lewis Company before it was taken over. The death of Donald M. Belcher occurred on April 9 at the Winchester Hospital. At the time of his death he was sales manager of the hydraulic division of the Chapman Valve Company of Springfield, Mass. After his graduation he was engaged in various engineering activities in connection with waterwork projects in New York, Philadelphia, Massachusetts, Washington, Pennsylvania and Cuba. In 1913 he became associated with the Coffin Valve Company, Neponset, Mass., and became its general manager. This company was taken over by the Chapman Company and he continued with this Company. He leaves his wife, Katherine Edgett Belcher. Belcher had made Winchester his home in the early years but at the time of his death he resided at 64 Old Mystic Avenue, Arlington. — BURTON G. PHILBRICK, *Secretary*, 18 Ocean Avenue, Salem, Mass.

• 1903 •

Your Assistant Secretary has been spending the winter in California visiting various relatives and friends and has been unable at times to supply class notes on account of his travels. At present (April 6) he is about to return to the East Coast and his home. While on the Pacific Coast he was married again and the new Mrs. Cushman will be in residence shortly. The winter in California has been delightful in that the only snow seen has been on the mountains and in the northern part of the State. In altitude he has journeyed from 279 feet below sea level up to better than 5,900 feet, both in Death Valley. There was snow in the Yosemite Valley the day he was there but elsewhere flowering shrubs, small plants and orange trees were in blossom and he has experienced no severe cold. He had the thrill of picking the most delicious oranges he ever ate from trees in the yard of the present Mrs. Cushman during the month of February. He may have further notes in connection with his travels in California and the many visits he made with classmates in that State and enroute to it.

A few notes have been forwarded from the Alumni Office. Arthur S. Gibbs, VI, has changed his class affiliation from '09 to '03. Gibbs took practically all of his Institute courses with our Class but did not get his degree until later. He was very anxious to join with the Class at its 50th Reunion last June and we were very glad to renew acquaintance with him. It did not seem to us that Dean Potter was properly recognized and appreciated at our 50th Reunion and we are always glad to receive further information about his activities. He is still a very active man on research work for the coal industry and it was a great pleasure to the rest of the Class that he was able to be with us even for a short time.

We are sorry to have to report two deaths in the Class since our last meeting. John A. McKenna, II, died in Ottawa, Canada, on September 27, 1953, and Harry A. Stiles, III, died in Florida on March 19, 1954. So far as we have any record McKenna had not attended any Class reunions in recent years but Stiles did attend several reunions during the last 25 years. We have received no details in regard to either death, notice having been received at the Alumni Office from Mrs. McKenna and a published notice in the Boston *Globe* in regard to Stiles. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, Box 103, South Wellfleet, Mass.

• 1904 •

This business of producing more or less interesting items of so-called "news" for the class notes section of the Review is becoming a habit and probably not a bad habit at that. The big trouble is finding anything to write about. I begin to be more and more envious of authors who are able to originate stories or some such things right out of their brain. You may believe me when I say I am no author, and such things as I produce for this publication are somewhat laboriously produced.

As I write these words on April 13 there is little I can say about the 50th Anniversary doings because you will not have these lines to read until after you have probably started your "trek" to attend the Reunion. At the present time, things seem to be shaping up to insure a successful affair and I hope most sincerely that each of you will be a participant.

I am pleased to find that the 1904 class notes in the Review seem to be quite widely read beyond the members of 1904 for whom they are primarily created. To those of you who are constant readers, you will doubtless remember that in the January, 1954, issue I wrote somewhat extensively in an effort to acquaint you with the reason why I had not been heard from over a long period of time. You can imagine my surprise when I received a letter from an unknown writer, telling me that the writer was much interested in my effort in the January issue. He asked the question as to how I had escaped from Sanitarium living to attend reunions in only 10 years and stated that he had been in such a place for 22 years. He closed his letter by saying that he was a member of the Class of 1908 and gave his name as Percy L. Handy. I have had some correspondence with him and hope I can provide him with something to occupy some of his time as I know from experience, time hangs heavy in such places.

And only yesterday I received a letter from a good friend in 1903, who gives me permission to use any portion of his letter but prefers to remain anonymous. Suffice it to say that I remember him well but have not seen or heard from him for a long time until now. He says he always reads the 1904 class notes and has evidently read the stuff in the April, 1954, issue. I hope you all have also read it, so you will know what he is talking about when I quote his letter: "Referring to the last issue. Paine was in the Grand Duke. I can prove it by the picture I have showing the principals in that show. I might even recite for you some of the songs if they still have any significance. Earl Ovington flew a Bleriot Monoplane when he did his best flying. He brought it over from France and used it in the race he won against Claude Graham-White. It was quite a race in those days. It was from Boston to Nashua to Providence to Boston. And the next morning the Boston *Herald* had a headline saying, 'This is one time the band DIDN'T play God Save the King.' I spent the afternoon before the race with Ovington and went over the course carefully with him. He had planned the race with his customary meticulous care and as usual came out just as he had planned. Sometime later when he had become interested in his High Frequency coil, I met him going down to N.Y. on the Fall River Line. The next morning we went up to his N.Y. office and he showed me a lot of stunts with his apparatus, lighting electric lights from my nose and other such fancy jinks. After a while I asked him what would happen to me if he failed to plug in the wrong hole. He just replied rather nonchalantly, 'Oh, you would never know about it.' I guess I would have just gone up in smoke. Joe Crowell was interested in lots of things besides Stanley Steamers. He tried to start a real estate boom down on Cape Cod in Florida style and might have gotten away with it if the Florida boom hadn't gone bust just about that time. Joe had a lot of real brains and usually won out."

I remember very well the aeroplane race to which our 1903 friend refers, but I do not remember when it took place, although I would place it around 1912. It is possible that the Bleriot Monoplane mentioned here may have been the plane in which Volts flew the mail flight mentioned in the April notes. And I have heard of many other electrical marvels which Volts used, such as door knobs which shocked one when grasped, and doors that opened when approached. These were forerunners of things quite common in later days. (I do not mean the shocking door knobs became common.) It just shows that 1904 had leaders among its members. And about the lots of things beside Stanley Steamers which interested Joe Crowell, I would mention the garage he operated on Commonwealth Avenue, Newton, right about where the present Newton City Hall is situated. Also he or his family ran the Highland Grain Mills in Newton Highlands. There are just a couple of facts about two of our classmates who some years ago went "to that bower from which no traveller returns."

And so with an assist from 1903 for which due appreciation is here registered, I have been able to offer for your amusement and edification, a little something to keep the news from the following Class from stumbling over the news from the preceding Class. Something like the way the ham in the sandwich keeps the two slices of bread apart. If I could think of anything more to include here I should be happy to include it. Perhaps the fact that the American League baseball season is opening this afternoon with the Red Sox playing the Athletics in Philadelphia has something to do with my lack of thoughts for class notes. I may say I am a Red Sox fan and so I will turn on the radio and say *auf wiedersehen* which I hope will be at Oyster Harbors in June. Before doing so, however, I must report that our class flag must be lowered to half staff again. This time it is for William H. Edgecombe, II, of Kokomo, Ind. Bill died March 12 after a lingering heart ailment. He had been with the Continental Steel Company for 17 years and was active in Masonic and other civic affairs. Mrs. Edgecombe, who survives him, has the deep sympathy of the Class. — HENRY W. STEVENS, *Secretary,* Whitney Homestead, Stow, Mass.

• 1905 •

The 49th Reunion of the Class will take place at the Wianno Club, Osterville (Cape Cod), Mass., on June 25, 26, and 27, 1954. This is one of our regular annual get-togethers, intended to attract those who wish to meet in delightful surroundings for the purpose of communing with regulars or irregulars. It is not intended to detract from the big Fiftieth in 1955. If for the 50th, you are saving up energy, health or pennies, you may not be interested in the 49th. However, you might want to take a "refresher course" this year.

The March 28 issue of the Providence *Journal* shows on the front cover "a picture of a man holding the heavens in his hands." That man is our Bill Green, who according to another headline is "something of a wizard from Barrington who can put them on the ceiling, all moving in their appointed places." For several years Bill has been working on a small projector and planetarium which could be available to small colleges or classrooms. The Green projector weighs but a few pounds, takes up less than eight cubic feet of space, and costs around $1,000, as against the projectors in more elaborate planetariums which weigh two tons, are a dozen feet long and cost about $200,000. The story is partly the result of the installation (and sale, too, we presume) at Brown University. Here's hoping Bill's sales department may keep his production department very busy. The paper adds "he is a graduate of M.I.T., a sort of double graduate, holding a master's degree in both electrical engineering and science. He worked for Diamond Match as a young man and has taught mathematics at M.I.T., Putney and St. Georges. He worked on a mustard gas project in Washington during World War I, and there he knew Dr. James B. Conant who invited him to Harvard as a special lecturer. The thing he loves to do 'is to teach kids math' but the school system in Rhode Island requires more schooling, which Mr. Green did not wish to do."

I wish you could see the documentary evidence submitted by Ray Bell to prove he is alive and active in business. Several clippings from the New York *Times* in 1949 and 1950 tell of his activity before Congressional committees on the "basing points system." These clippings together with a "submittal of experience" prepared for consideration for membership of the Hoover Commission are so long that you will have to attend a class reunion in 1954 or 1955 and read them yourself. However, you will be interested in a condensed story of Ray's doing during the past 19 years, so I'll let him tell it. "As to the family tree the score is perfect — no children so QED no grandchildren. You see I am such a show as to myself that I feel no need for sideshows. Besides such indulgences as the Yankee and gentleman farming leave no surplus for family expansion. To compact 19 years into the justifiable space I deserve is very simple. I started building up a place on Long Island in 1936 that I thought would be the resting place for me and "my family" during the few remaining years that might be allotted to me. But no! The war clouds began to darken in a menacing way almost at once and with that phenomenon there was a heavenly attraction of property taxes skyward in their direction. Since I thought I should make my Washington war record double we began to think in terms of a hegira Southward to combat the threatening clouds and the taxes in one move. So we looked around but not too hastily and it got to be 1940 when we bought an old plantation near Fredericksburg whose deed dates back directly to a land grant from the King of England. The original deed was for 13,000 acres but by the time we happened around it had become so attenuated that you could squeeze it into four square miles.

"For several years we gyrated between Long Island and Chestnut Valley and indeed added an apartment in both Washington and New York so as to make orientation a necessary science of living. Now all is simplicity and constricted. We reside only in one place — of course there is enough room for me and "the family" and indeed we can spare an occasional room for an itinerant visitor among the 20 some that are available. And since the rooms are all of about the same size, 15 x 20, he need not feel he has been shunted discourteously to a hall bedroom. So we came and went — in Washington and New York most of the time during the war days. About all we saw of Chestnut Valley was the trip through the woods, about a mile from the highway, to its center where all of the open land is located and the houses, out-buildings and installations.

"Come 1946 we were getting out of Long Island, New York and Washington and concentrating here at Chestnut Valley. So I began to penetrate to the confines of the property. It was quite a job since old roads had become obliterated by the growth of trees and brush. The chances of getting lost were obvious so I always allowed plenty of daylight time to find my way back. When it got around to 1947, it began to impinge itself upon my conscience that I had quite a woods operation on my hands. However, it did not seem to disturb me much that I had scarcely ever thought about the production and merchandising of forest products except in the restricted field of my woodworking shop here where I turned out mop handles and wooden hatch wedges for the ship chandlers. The final estimate that there was about 850 acres of woodland, mostly pine, that marketing and harvesting would be no short time project with a small force and in our seventh year right now we do not appear to be more than half finished.

"Two years ago, my point of view regarding this activity took an unexpected turn when I learned that the Army was planning to sell the pine timber on 70,000 acres military reservation across the street from Chestnut Valley. I knew the area well for I had supervised its purchase when I was on the General Staff in 1941, so I began to study the problem at once through my own operation and a year ago successfully negotiated a contract. It required no financing as I was only required to pay for it on the basis of the cordage taken out monthly. But the monthly requirement is a healthy one — 1,250 cords — and the term a long one — 20 years — so it is obvious that someone besides me will see its completion. Although I had a very completely laid out plan for mass production it involved innovations in methods and equipment that it seemed to me wise to apply practically in a small way here at Chestnut Valley first so I subcontracted the military operation for one year. The execution along conventional lines has not worked out well and the volume requirement has not been met so it looks like I would take over on April 1st when the first year is up. In the meantime I have built special equipment for this special purpose and it is operating very satisfactorily here — indeed it shows a reduction in unit costs of at least one half. So I view the 'take over' with equanimity.

"But lo — another fire breathing monster appears on the horizon. Last summer, one of the final acts of the Congress was that setting up a Commission on the Or-

ganization of the Executive Branch of the Government. That is, all parts of the government except Congress and the Judiciary. Quite an assignment, huh? But the Commission has vast plenary powers as well as responsibilities and being a fiend for punishment as you may observe from the above I immediately began to take an interest. Former President Hoover is chairman and your Ex-Ambassador Kennedy is a member. For reasons I will not delineate Hoover has experienced great difficulty in getting his Commission off the ground but time is pressing and he may succeed soon. In the meantime I have been doing some special work of mapping out lines of approach once they get moving. Of course I had no idea I would have to step in on the military contract last summer and if the two should come together something is going to have to give way – either me or one of the two jobs. On the Commission my assignment would probably be the conduct of a study and recommendations on Procurement in the Department of Defense where a big share of the money is spent as you well know. Aside from all this I am enjoying good health and my energy shows no immediate signs of diminution – perhaps because I have reduced from 225 to 185 pounds through this rugged living."

A brief letter from Hallett Robbins, I, address P.O. Box 3291, Honolulu 1, Hawaii, tells of his complete retirement in 1947. He has been "living very quietly, alone, in this most delightful of all places, a few blocks from Waikiki Beach, where I enjoy a swim and sun bath almost every day of the year." A letter from Elbridge G. Allen, I, address 540 So. Upas St., Escondido, Calif., tells of his retirement as Special Engineer of the Atchison, Topeka and Santa Fe R.R. in Chicago in January of this year, and of enjoying life on a ranch house on top of a hill "in this beautiful city of 6,500." Jim Newlands, XI, reports semiretirement from his work as consulting sanitary engineer in Hartford, Conn., due to a blood clot in the back of his head. He is President of the Henry Souther Engineering Company.

Harry Gabriel, I, after explaining his silence of many years, tells of retiring in 1948 after being with the Bridge Division of the New Jersey State Highway Department for 22 years. The shock was so great that he joined the engineering department of Hamilton County, Ohio, and has been in charge of the construction of bridges. Charlie Emerson, XI, reported while on a vacation trip to attend the dedication of a Goethals Memorial at the Canal Zone that he had a "pretty good winter and am trying to get out from under. We are so busy it is hard to dodge responsibilities."

Remember to save up energy, time, and pennies enough to enjoy the 50th Reunion in June, 1955. It isn't too early to start planning. – Fred W. Goldthwait, *Secretary*, 274 Franklin Street, Boston, Mass.

• 1906 •

It is very gratifying to the Secretary to be able to include the following letter from Robert E. Cushman of Portland, Oregon, dated March 14: "An '06 class reunion is undoubtedly of interest to fellow classmates, as this particular gathering was confined to the M.I.T. Club of Oregon. On March 6 our entire '06 local contingent met at the writer's home to talk over old times before an open fire in the fireplace. Those who joined in this evening of reminiscence were: William Cady, Fay Libbey, Henry S. Mears and the writer. Decorations and flowers were arranged by Mrs. Cushman who also acted as our hostess. During the brief business session we voted to present our Club with a myrtle wood gavel bearing a plate suitably engraved, indicating our Class as the donor.

Dean Burchard was the honor guest at a dinner meeting of our M.I.T. Club of Oregon. We four of 1906 took advantage of this occasion to formally present the gavel. The address by our Dean of Humanities was outstanding and, appreciating that this would be the case, we invited the ladies and other special guests. Another event of the evening taking me completely by surprise was the following: After turning over the gavel with an appropriate installation, our new President Hal R. Seykota'39 on behalf of the Club presented me with a silver bowl – a Paul Revere reproduction – engraved, 'To Robert E. Cushman, Twenty-five years as President, M.I.T. Club of Oregon, Presented 1954.' I feel humble, and honored by our club for their wonderful gesture."

The Secretary replied to Cushman congratulating him on his honor and advising him that those '06 men 3,000 miles away set an example which would be well for the Boston group to follow.

The Secretary acknowledges a note from Stanley Udale in appreciation for his write-up in the March issue.

The Assistant Secretary, Ned Rowe and his wife Marion spent a few days early in April at the Northfield Inn, East Northfield, Mass. They dropped a note to the Secretary recommending the place for a Class Reunion. The Secretary commends Ned's good judgment as he is acquainted with the place and spent a few enjoyable days there a number of years ago. It is a beautiful resort for many Bostonians and is certainly an attractive spot for rest and recreation. As our next Reunion is two years away and we are already dated up at Snow Inn down on the Cape, we will have to defer Northfield until after our Fiftieth.

A letter was received from Abe Sherman dated Sarasota, Florida, March 25. It enclosed a clipping from the Sarasota *Herald-Tribune* dated March 25, 1954, advising of the death of our classmate, Walter N. Munroe, who resided in Sarasota. The following notes concerning his career were taken from the clipping: "Walter Nathan Munroe, 69 of Siesta Key, a pioneer in the development of the west coast of Florida, died at his home yesterday afternoon. Mr. Munroe was retired division manager for the Florida Power and Light Company, has been a resident of Sarasota for the past 19 years and has been active in civic affairs. A native of Cleveland, Mr. Munroe came to Sarasota from Texas where he had distinguished himself in the field of public utilities. Active in business and civic affairs, he became widely known throughout the west coast area. In addition to his work with the power company before his retirement in July of 1949, Mr. Munroe served as president of the Sunny Land Council of Boy Scouts for several years. He was a former president of the Sarasota Rotary Club and was active in the Chamber of Commerce. He was an active member of the Church of the Redeemer and had served as both junior and senior warden of the Church. Mr. Munroe was also a retired officer and former president of the Sarasota Chapter of the American Red Cross. He is survived by his wife, Mrs. Rebecca G. Munroe; one son, James L. Munroe of Rockledge, Fla., and one brother, James A. Munroe of Newton Center, Mass." Munroe was a Course VI man and was also affiliated with the Class of 1905, although he has always been on the 1906 list. The Secretary has no recollection of seeing him since graduation. Abe Sherman has spoken of seeing Munroe while wintering in Florida, but advised he had not seen him as much since Munroe retired. Abe states that this leaves Frank Baldwin and Lawrence Stone as the only other members of '06 who reside in Sarasota. Incidentally, Abe returned to his permanent residence in Rochester, N.Y., about the first of April.

We regret to report another death at this time, viz., that of George M. Henderson. Extracts from his obituary printed in the *News-Tribune* of Waltham, Mass., of February 18, follow:

"George M. Henderson, 71, well-known proprietor of a Socony-Vacuum filling station on the Worcester Turnpike in Wellesley, died suddenly yesterday from a cerebral hemorrhage at his home, 78 Chestnut Street, Weston. He served as a bugler at the age of 15 in the Spanish-American War with Company C, 5th Massachusetts Infantry, and in World War I was a captain with the 33rd Engineers serving overseas at Brest, France. He was born November 2, 1882, in Newton, son of the late William J. and Annie (McLean) Henderson. After attending Newton schools and serving in the Spanish-American War, he graduated from Newton High School in 1902, and from M.I.T. with a B.S. degree in civil engineering in 1906. For many years he was a mining engineer in various Western states. He is survived by a brother, William J., with whom he had made his home in Weston for the past 45 years and several nephews and nieces."

The Secretary believes this newspaper item should be corrected in that George was a Course III man and spent a good many years as a mining engineer not only in this country but part of the time in South America. Some years ago we had occasion to refer to him in connection with a newspaper article where he had started on another mining expedition after abandoning the profession for some time. More recently he has operated the filling station on the Worcester Turnpike and has appeared at some of the Alumni meetings in Boston. He therefore will be missed from the Boston group. – James W. Kidder, *Secretary*, 215 Crosby Street, Arlington 74, Mass. Edward B. Rowe, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

Several of you men have told me, or written to me, that the first material that you look for upon receiving your copies of

the Review is our class notes. Rarely have I completely disappointed you by having no news at all regarding activities of our classmates, but on this Easter Sunday, when I am writing this brief statement, I have absolutely no new information at hand regarding any '07 men. Without doubt many of you are doing things professionally or businesswise or as avocations in your retirement from active business duties that would make mighty interesting reading for your classmates, but I can't write about matters of which I am ignorant. I'm sorry, fellows, to disappoint you this month. I sincerely hope that I shall never fail you again. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

The third dinner meeting of the 1953–1954 season was held at the M.I.T. Faculty Club, Cambridge, Mass., March 17 at 6:00 P.M. The following answered the roll call: Bunny Ames, Jeff Beede, Bill Booth, Nick Carter, Myron Davis, Sam Hatch, Winch Heath, Bill Hunter, Steve Lyon, Linc Mayo, Henry Sewell. Several of our regulars were unable to attend as they were basking in the sun of Florida or California. Following the usual sojourn in the cocktail lounge, while developing a proper appetite, we adjourned to our private dining room ready for the usual excellent dinner. Joe Wattles had a previous dinner date with his wife which couldn't be broken, so we had no Kodachromes. Joe has promised to show us some next fall. He is a pretty busy boy, as he and his wife left during April for a visit to Hawaii and then on to Seattle for the annual meeting of Rotary International early in June. Hope he gets home in time for Alumni Day on June 14.

John Larned, retired Bishop of the Convocation of American Churches in Europe, was married on February 19 to Mrs. S. Parker Bremer of Boston and Dublin, N.H., at Ponte Verde Beach, Fla. Edgar Slack, Professor and Chairman of undergraduate Physics at Brooklyn Polytechnic Institute, has been retained as Director of the new program of Fire Engineering Training for recent college graduates being instituted by the National Branch of Fire Underwriters.

Edmund Warren retired in February after many years as head of the Productions Department of Stanley Tools, New Britain, Conn.

We are sorry to report the death on April 11 at Pottstown, Pa., of George Lees. George was president and general manager of the U. S. Axle Company, which he founded in 1919. He was a staunch supporter of 1908 and we will all miss seeing him at future reunions. Although not feeling too well at our 45th last June, he had a wonderful time. The sympathy of the Class is extended to his family. George Belcher writes from Harvard, Mass., "We see the Collins' quite frequently. Dick is certainly happy with 'only one boss instead of seven' as he describes it. I went out in the Bay with him and two other retired men at low tide a while ago and got some nice scallops. I'm still busy with golf, gardenias, housepainting and other chores. Hope everything is going well with you and that '08 news is coming in for the Review."

Well, '08 news is still scarce. Why not send some to me and help George's hope become true? Don't forget that Alumni Day is June 14. Try to get there and join with 1908 in having a wonderful time. — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LINCOLN MAYO, *Treasurer*, 47 Alton Place, Brookline 46, Mass.

• 1909 •

Early this month Jim Critchett, VIII, paid a visit to Boston and invited the Secretary and Muriel to the Parker House for dinner. For the three of us lobster à la Newburg (made us think of Tom's town on the Hudson) was the piéce de résistance, and the remainder of the dinner was in keeping with Parker House tradition. Jim primarily wanted to talk over class affairs, particularly the Reunion. He has practically selected the Class Fund Committee, the members of which will be announced later. As for himself, he stated: "My expected checking out from Washington activities did not quite take place. I had been serving on Minerals and Metals Advisory Board of the National Academy of Sciences and expected the Board to fold up under the reorganizations going on in Washington. However, the Pentagon unexpectedly requested that the work go on. A somewhat modified committee has been set up known as the Materials Advisory Committee of the National Academy on which I have been asked to serve. The work is not onerous and helps to keep me in touch with technical progress, so is really enjoyable and worthwhile."

This makes at least four members of the Class who have been honored by appointment to important government positions — Johnny Nickerson, II, who is a member of the Economic Cooperative Administration; Molly, XI, who is a consultant to the Chairman of a Task Force on Water Resources and Power, and Franz Schneider, VII, who has recently been appointed one of 10 men to assist Herbert Hoover's Commission of Organization of the Executive Branch of the Government.

Speaking of Molly, he has recently sent us a copy of the magazine *Antiques* containing an article by himself entitled "Collecting Views of Natchez." In the article are shown several views of the earliest days of the city and a 1729 map showing the houses of the early French settlers. As we all know, Natchez is Molly's native city and at the present time probably contains more examples of the old southern architecture and plantations than any equal area in the country.

This copy of the Review will be issued early in June, just about a week before the Reunion at Chatham Bars Inn. There will still be time to make reservations, so plan to come and renew old friendships and enjoy a couple of days relaxation at this most attractive resort. Also, don't forget Alumni Day, the 14th, when we can see the Institute as it is today as well as have luncheon together in the DuPont Court and attend the banquet in the evening.

We have recently received from Alice and Tom Desmond, I, a copy of Alice's latest book, *Barnum Presents: General Tom Thumb*. Like all her previous biographies, the book gives an intimate and detailed account of these two outstanding characters of the entertainment world. We know that all of you will find it well worth reading.

We have learned that B. Edwin Hutchinson, II, has spent some time in Florida this past winter recuperating — probably from his intensive work with the Chrysler Corporation. We all wish his early return to complete recovery.

The Alumni Office has notified us that Marcus Cole, II, died "in 1954." No other details are given. Marc prepared for the Institute at the Lowell High School, was a member of the Tug-of-War team in his freshman year and a member of the Mandolin Club in his sophomore and junior years. We all well remember his congenial and entertaining ways, particularly in the engineering drawing room. In the January 1949 Review we reported that Marc had been appointed to the staff of the Barney Motors, Inc., a Buick agency in Attleboro, Mass. His picture in the Attleboro *Republican*, aside from a slightly higher forehead, showed little change from his appearance in the Class Album. He was a 32nd degree Mason, past member of the Rotary Club, director of the local YMCA, and was active in church and civic affairs. — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* HARVEY S. PARDEE, 549 W. Washington Street, Chicago 6, Ill.; MAURICE R. SCHARFF, 366 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, Wenham, Mass.

• 1910 •

It is with extreme regret that I have to announce the passing of William J. Keefe. The following is from the Boston *Herald:* "William J. Keefe, 65, superintendent of rolling stock for the Eastern Massachusetts Street Railway Company, and former chief engineer for the State Department of Public Utilities, died at his home, 33 Thompson Avenue, Hingham. Born in Dorchester, Mr. Keefe was graduated from Massachusetts Institute of Technology in 1910. As chief engineer in the Public Utilities Department for 20 years, he exercised jurisdiction over buses and trolleys throughout the state. During World War II he served as a Lieutenant Colonel in the Massachusetts State Guard. He left state service in 1947 to become superintendent of maintenance for the Eastern Massachusetts Street Railway Company."

During the past month I have had letters from Stuart Sneddon, Myrton Turnbull and Jim Tripp. Jim has returned from an extended trip to the Near East and other points of the world where he has been on business.

I met Al Huckins recently. Al has retired from active business and his relief from business appears to have been most beneficial to him.

The following is quoted from the Boston *Herald:* "A long-time member of the faculty of Massachusetts Institute of Technology will retire this summer, the school announced yesterday. Professor

John B. Babcock, III, Professor of Railway Engineering in the Department of Civil and Sanitary Engineering, will be placed on the retirement list after June 1. Professor Babcock, a native of Boston and a member of the M.I.T. faculty since 1915, will continue as a lecturer in the Civil Engineering Department. He became a full professor of railway engineering in 1928, and was awarded a special prize in 1936 by the Boston Society of Civil Engineers. He resides in Newton Center, Mass."

Information of class members has been very meager for the past two months. Perhaps it has been due to the fact that I took a vacation of five weeks. I guess I needed it as I feel more as I should since I returned. On March 4 I took off and made a stop at New Orleans. I managed to get John O'Neill on the telephone just before I had to leave. John is to retire in the near future from the Louisiana State Health Department. From New Orleans I stopped off at Dallas, Texas, where I met Frank Bell and his wife. Frank insisted on giving up his business to give Mrs. Cleverdon and myself a glorious time and an opportunity of seeing Dallas as could not be seen as an ordinary visitor. Frank is very busy in road contracting work and enjoys his spare time in Civilian Defense and other civic occupations. From Dallas we flew to Mexico City where we attended the Mexico City M.I.T. Club Fiesta. This was a three-day affair; a luncheon for the men at the University Club and one for the ladies where a Yucatan meal was served after which an exhibition of Yucatan dancing was given. On Friday there was the banquet at the University Club, also attended by the ladies. After the banquet and speeches a most unusual exhibition of native Mexican and Indian dances was given. The costumes were beautiful and the pageantry was really wonderful. Saturday evening we attended a garden party where our Mexican members of M.I.T. proved to be most gracious hosts and we had a glorious time. Mexico City we found to be a most modern city and the new construction under way was greater than that now under way in Massachusetts.

From Mexico City we flew to Guatemala. We were a trifle skeptical about going but were assured by the U. S. Embassy in Mexico that there was no reason for not going. We were glad we went as we had no untoward incidents. It is a strange country; beautiful in scenery and flower but a population of 70 per cent Indians who live and work in a most primitive way.

From Guatemala we flew to Panama where, as an engineer, it was a must to see the canal, locks and dams. The population is far different from Guatemala in that here it is Spanish and Negro. Also, the sun is more intense.

From Panama we flew to Puerto Rico. This island was delightful; warm weather, true, but with constant breezes from the trade winds and if one keeps in the shade he may remain comfortable. As may be surmised from the foregoing, I do not like the hot sun and I was happy when I landed back in N. E. to have cool weather. I am glad I made this trip as I have ever been desirous of seeing the tropics but in the future my trips will be to more cooler climates. — HERBERT S. CLEVERDON, *Secretary*, Cleverdon, Varney & Pike, 120 Tremont St., Boston, Mass.

• 1911 •

By curious coincidence two of our classmates died on March 24 — in Providence, R.I., it was Charles A. Maguire, I, and in Salem, Mass., George A. Upton, I. Both were 64.

Founder and senior partner of his Providence firm of Charles A. Maguire and Associates, Charlie had since 1938 designed a large number of public works and construction projects in Massachusetts and Rhode Island, prominent among them the Mystic River Bridge from Boston to Chelsea, the proposed north-south freeway through Greater Providence, the Tiverton-Portsmouth Bridge over the Saconnet River, the $25,000,000 air base which became the nucleus for Quonset Naval Air Station.

Born in Worcester and moving with his parents at an early age to Providence, Charlie attended Providence public schools, Holy Cross College, and finally joined us midway through our M.I.T. course. His career as a building contractor was interrupted in the '30s by several years as commissioner of Public Works in Providence after which he established his engineering and architectural business.

He was a member of the Athletic Club, Metropolitan Club, the Moles and the Engineers' Club of New York; The Engineers', Algonquin and Clover Clubs of Boston; the Turks Head Club of Providence, and a large number of professional societies. Surviving are his wife, the former Corinne Walsh; a daughter, Mary; a stepson, Charles D. Casey; and a brother, William J. Maguire, public buildings commissioner in Providence.

Charlie was an ardent alumnus and an enthusiastic supporter of his Class of 1911, although he had attended but few reunions. We shall miss him and his class interest.

George Upton spent a couple of years with us at the Institute, but thereafter had seemed to take no active part in M.I.T. or class affairs. He made his contribution to society through energetic and outstanding efforts in Universalist circles in his native city and in state and area activities. He was treasurer of the First Universalist Church in Salem, former treasurer of the Universalist Publishing House in Boston and former president of the State Universalist Convention of Massachusetts.

A native of Salem, George was also an active member of Essex Lodge of Masons. He leaves a wife, Mary; two daughters, Mrs. Edward V. Knight of Lenox and Mrs. Charles H. P. Copeland of Salem; also two brothers, Clarence H. of Salem and Ernest F. of Silver Spring, Md. Sympathy, of course, was sent to the widows of both of these Course I classmates.

My eagle-eyes and the grapevine failed me horribly last fall, when, as I later learned, the *Engineering News-Record* featured its October 1 issue with a cover action picture and inside feature story of William J. Orchard, XI, general manager of Wallace and Tiernan Company, Inc., Belleville, N.J. — and, of course, modest Bill failed to refer to it in the talk-around at the January "Welcome to Dennie" luncheon in New York. To Ban Hill, I, consulting engineer in semiretirement at Baltimore, Md., goes the kudo for revealing the fact and then securing a copy for me and if you didn't see it, get hold of a copy from a fellow engineer or refer to one in an engineering library — you'll enjoy it.

On the cover, over the caption "Bill Orchard draws Wallace & Tiernan's statistical portrait daily for his staff on the run," you'll see Bill's effervescent smile and ever-present white carnation, as he looks directly at you. Then over the main story on page 38, Bill appears seated and in conversation, with a caption which leads directly to the title of the article, as follows: " 'Selling is the Greatest Profession in the World.' That's the belief of . . . Bill Orchard: Poet, Peddler, Sanitary Engineer."

"Perhaps no other man alive as forcefully as Bill Orchard personifies and speaks for the sizable and significant segment of engineering and construction that may be grouped as water supply and sanitation," says the article. "It will give pause to the thousands in sanitary engineering who know, to consider that the always energetic Orchard, the perennial toastmaster and great showman, will be 65 this (last) November 15, when he plans to take a less active role in W. & T. business activity; and if he decellerates his professional and community activities, too, Essex County, N.J., will feel his gradual retirement just as surely as will the force of 150 sales engineers W. & T. has in the field. Bill Orchard has put a lot into life and gained the respect of all those he's reached — in business, in his profesion and in his community."

Describing Bill as a "salesman's salesman," it calls his creed: "You've got to see them, to show them, to sell them," adding another Orchard maxim: "The only way to lead is to lead."

Next it describes Bill's active participation in the affairs of the many professional societies to which he belongs, for Bill claims that "every professional man has a responsibility to his profession." Emphasizing particularly his long-range activities in the American Water Works Association and the Water & Sewage Works Manufacturers' Association, it concludes in this section: "As a fellow in the American Public Health Association, Orchard the entertainer, who spouts his own verse, the complete extrovert, has for years 'em-ceed' its annual engineers' dinner. At the 1952 event, an appreciative audience presented him with a volume of tributes that is one of his dearest treasures."

In a final section on his community activities, the author says: "On a par with the APHA tribute, Orchard treasures a recently-struck bronze plaque. It's in William J. Orchard Playground in his beloved Maplewood, N.J., where friends and neighbors of long standing think highly of the man." We're proud of this fine and well-deserved tribute of you, Bill!

Another outstanding sanitary engineering member of 1911, whose retirement was reported in last month's notes, was tendered a dinner in New York City on March 11 — Dick Gould. Thanks to his brother, Allen Gould'10 of Cleveland, I

saw one of the menus, on which it read: "In tribute to Richard H. Gould upon his retirement from service with the City of New York, his friends and associates join in this token of their esteem and appreciation of his conspicuous accomplishments as a public servant, as a distinguished sanitary engineer of international repute, as an inspiring leader and planner, and as a cherished friend. He conceived the city's comprehensive plan for pollution control and for a quarter century has guided its execution. His retirement deprives the city of one of its most valuable specialists and executives."

Still consistently backing his thesis that the United States should be ready for a preventive hydrogen bomb attack on Russia, General George Kenney, I, was enthusiastically received by members and guests of the Worcester (Mass.) Chapter, Military Order of the World Wars, in that city on April 13. "The state of the world today," said George, "isn't much different from frontier days, when the ordinary citizen carried a gun so that if he saw a bad man reaching for a gun or making a motion like he was, it was all right to beat him to the draw." George said: "It's time somebody wrote a letter to Moscow, saying: 'Dear fat boy – the following things constitute reaching for the gun.'"

With characteristic frankness, George then discussed what he would do if a heavy concentration of Russian bombers were discovered across the Bering Straits from our advance bases in Nome, Alaska. "If I had an outfit there," he said, "I might pull a raid and wipe out those bombers and then tell the government 'here, you can have my commission.' But if I were running the show, I'd tell the Russians 'we're not at war with you – we just shot the gun out of your hand. The next one will be right between the eyes.'"

After repeating his oft-asserted belief that we must have the best air force in the world as a first line of security against Russian attack, he compared our actions in Korea and Indo-China with "putting lots of guys with fly swatters to work swatting mosquitoes when you could D.D.T. the whole swamp." He did, however, advise against using nuclear weapons in these areas, saying that they would be wasted there because "the target is in the Kremlin." "When the Russians have what they consider enough bombs," the General concluded, "they'll blow the whistle on Uncle Sam and he is going to survive or start taking orders from Moscow on the very day they blow that whistle." George was introduced by a World War I veteran – classmate Harold Robinson, I, now residing in nearby Holden.

General George was chided, two days later, in an editorial in the Worcester *Telegram*, which said, "It is just as well that General George C. Kenney is retired and therefore not in any way a spokesman for our government. The talk he gave here Tuesday was not designed to help the cause of peace, for peace and national security are, after all, the chief ends of our foreign policy. We are building up our military strength in the hope and belief that we will not have to use it in World War III – but General Kenney says that we should 'beat Russia to the draw,' since Moscow is plotting a massive bombing attack on us. . . . No matter how you slice it, you cannot avoid a war by starting it. That is what General Kenney seems to forget."

In the February 14 Boston Sunday *Herald* rotogravure section was a quartet of fine photos of the farm and horses of Mr. and Mrs. William H. Coburn, XI, under the title: "Thoroughbreds . . . The Blue Grass of Kentucky has long been considered choice grazing for finer horses, but the accompanying photographs, which perhaps look like something from Kentucky, were taken at Blue Chip Farm, in the heart of New Hampshire's apple orchard country, at Hampton Falls, New Hampshire."

In answer to a request for further details, Bill wrote: "Physically, it is a typical New Hampshire farm, with 95 acres of land, of which about 50 acres are cleared and either in hay or pasture, with about 25 acres in a pine lumber lot and the balance lowland or small trees. The buildings were built in the early 19th Century, comprising a 12-room house, with eight fireplaces; a barn 45 feet x 85 feet; various sheds; a seven-room cottage for our trainer; and a cistern which holds about 17,000 gallons – an emergency water supply for the barn."

The Coburns purchased it in 1952 and have been equipping it as a breeding farm for registered saddle horses and for registered Hampshire sheep, the present herd comprising 17 horses and 30 sheep. They also have two stallions. One, Colonel Davis, is a son of the famous Kalarama Colonel, the other, Sandy, is his half brother, the son of Grasslands Barrymore. Both are grandsons of Kalarama Rex, an outstanding saddle horse sire. Some of the brood mares they have bred, others they have purchased from other farms.

"Our trainer, Larry Bowman," Bill continues, "has been employed by and had charge of some of the well-known breeding farms in the South, having had 22 years' experience with saddle horses. He also is a capable showman. Practically all of the horses at the farm are for sale, the only possible exception being one or two of our brood mares and stallions – so if you or any 1911 men would like to buy a top quality young horse or a made show horse, as they say in Kentucky, 'amateur broke,' just send 'em along." We'll accept your invitation some day, Bill, and "drive over from Framingham via Routes 128 and 1 and see the farm." This applies to classmates also, I know.

From Providence, R.I., we learn: "Mr. Raymond H. Lord, VI, President and Treasurer of Affiliated Factory Mutual Insurance Company, has retired and Mr. Robert P. Swan will succeed him." As forecast in these notes a couple of months ago, John L. Wilds, I, for so many years President of Protective Mutual Fire Insurance Company in Chicago, has retired to become chairman of the board and is now living in his home state – at 205 Woodland Drive, Darlington, S.C. We also learn that Oscar Gilcreest, VI, Philadelphia, veteran employee of General Electric Company, has retired and is now living at 208 Vassar Avenue, Swarthmore, Pa. Happy years of retirement to all three of you!

Jim Duffy, VI, wrote in March that he was leaving soon to fly around the world and in early April a postcard came from Singapore, saying: "Left on my round-the-world flight from gate 11; on Bali thought highest good rates on 11-tier pagoda (Vishnu gets 9 and Brahma 7)—so even here 11 is tops!"

Was so glad to hear from Franklin Osborn, III, in a congratulatory letter that he was back in his home town of Vineland, N.J., after a month in a Philadelphia hospital. "Am progressing very well," he wrote, "but I still go into a clinic each week. Will keep you advised, but should be returning to Chile soon."

At the late March stockholders' meeting of Boston Edison Company, John Herlihy, II, our genial Assistant Class Secretary, was re-elected to the board of directors, although, as reported earlier, he retired in late 1953 from active work. Also a card from Bill West, II, says: "Have been living at Ephraim, Wis., for 15 years, but still have business interests in Chicago, which means some commuting still."

And so some address changes to close: Gardner C. George, I, 1567 Mt. Eagle Place, Alexandria, Va.; Louis Grandgent, IV, 7 Bradford Place, Huntington Station, N.Y. (back from Santiago, Chile, S.A.); William H. Martin, VI, The Brandywine, 4545 Connecticut Avenue, N.W., Washington 8, D.C.; Mrs. Mayo Tolman, VII, 809 Country Way, North Scituate, Mass.; Col. Laurence Watts, 850 Ellis Avenue, N.E., Orangeburg, S.C. Hope to see you at Alumni Day at M.I.T., Monday, June 14, and I do mean YOU. – ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

Word has just reached me of the death of L. Juan Matamoros of San Jose, Costa Rica, who passed away on November 7, 1953. F. C. Loweth has just retired after 32 years as consulting engineer for the Cleveland Electric Illuminating Company. He was responsible for purchasing over 55 million tons of coal. Loweth also supervised millions of dollars worth of construction as the company expanded over the years. After graduation he was for nine years with the Chicago, Milwaukee and St. Paul Railroad and then joined the Illuminating Company. Loweth lives at 1812 Caldwell Avenue, Cleveland Heights. He is a member of the Cleveland Chamber of Commerce and Western Society of Engineers.

A postcard from Jay and Priscilla Pratt mailed at Acupulco, Mexico, reports a very pleasant month's vacation at this attractive resort. Joe and Mrs. Champagne are leaving for a summer's trip through Europe and will be unable to be on the Cape with us. Max Mason writes from 929 E Street, N.W., Washington, D.C., that he cannot be with us at the Cape as he is coming on to see his son graduate at the Institute. Max plans to retire to Hillsboro, N.H., in October this year.

Ham Merrill, President of Manning, Maxwell & Moore, is flying to Europe on May 14 with a group of National Association Manufacturers experts who will dis-

cuss mutual problems with foreign manufacturers. Charlie Cary reports that the Du Pont's Annual Educators' Seminar convenes the second week in June which will prevent his being with us on the Cape. Charlie reports that after he is turned out to pasture he hopes to be more sociable.

Bill Bird, President of Pro-phy-lac-tic Brush Company, is an ardent fisherman and has inside information that they will be biting over the week-end of June 12, which will prevent his being on the Cape. Good luck, Bill. Bernard Morash writes that he will not be able to get down to the States in June. His daughter, Carolyn, who many will remember at our 35th reunion, suddenly developed a blood upset two years ago for which there seems to be no cure. She has had several major attacks which completely paralyzed her legs, arms and throat. Physiotherapy treatment has improved her condition but she is still very ill. Bernard himself was struck down last November with tubercular meningitis but his strong will has pulled him through three and one-half months in the hospital, and he is now at home and will get back on the job shortly. I know he would be pleased to hear from any of you. His address is Freeport Avenue, Kitchener, Ontario.

Harold Greenleaf still heads up the Greenleaf Construction Company of Rock Island, Ill., and says he and his wife just returned from four weeks vacation in Florida. They do not feel they can get down to the Cape in June. Tod sends his regards to all. Howard F. Clark, Manager-Engineer of the Chino Basin Metropolitan Water District, Ontario, Calif., writes that distance and pressure of business will prevent him from coming East this summer. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass.; *Assistant Secretaries:* LESTER M. WHITE, 4520 Lewiston Road, Niagara Falls, N.Y.; RAYMOND E. WILSON, 8 Ogden Avenue, Swarthmore, Pa.

• 1914 •

Are you going to be with us June 18 to June 20 at Pine Orchard, Conn.? Five years ago several Fourteeners who had not sent in their questionnaires decided at the last minute that they would attend. After the reunion your Secretary received several letters from this group telling how glad they were that they had come on the spur of the moment. If you have not made up your mind to attend, why not do so at once and send a note or telephone Charlie Fiske or your Secretary that you will be there. A grand time is assured.

You have all probably noted that Ray Dinsmore has been nominated a term member of the Institute Corporation for a period of five years. Since Ray is unopposed in the election, his appointment for five years commencing July 1 of this year seems assured! Congratulations, Ray. The American Institute of Chemical Engineers has also elected him a director. Ray is vice-president in charge of research and development of the Goodyear Tire and Rubber Company of Akron, Ohio.

Art Mudge has sent in his class dues from Menton, France, where he has been enjoying a vacation. Art hopes to be back in time to tell us a bit about "Paris in the Springtime."

Does anyone know the whereabouts of Gilbert Ireland? The Alumni Office have been addressing the reunion envelopes from their stencils on plain envelopes; then your Secretary has had them mailed through his Company's mailing department. Ireland's mail has been returned all the way from Sao Paulo, Brazil, to your Secretary, with the only identification being the GR trade mark and Cambridge, Mass.

The magazine of the Aries Associates of New York has carried the following note regarding Alden Waitt: "For the past five months, Alden H. Waitt of the Aries organization has been surveying sulphur possibilities in Peru. Currently, the mining of sulphur in that country has been handicapped by primitive methods and crude operations. Production, consequently, has been rather negligible, despite the fact that deposits average over 50 per cent in sulphur content, with some as high as 80 per cent. The present survey, which is expected to be completed in a few months, will study the possibilities and economic aspects of modernizing sulphur operations in Peru."

Ernest Crocker, ever in the news and just recently in a feature article in the Boston Sunday *Herald* regarding his "million dollar nose," has just been elected a councilor for three years of the Northeastern Section of the American Chemical Society.

Hold your seats everyone. The following news item has recently appeared in a Hartford paper: "Dr. and Mrs. George Ross Wells of Clearwater, Florida, formerly of this city, announce the engagement of their daughter, Lois Meader, to Charles Hugh Chatfield of Steele Road, West Hartford. The wedding is planned for May in Clearwater.

"Miss Wells is a graduate of the Lincoln School, Providence, R.I., and the Katharine Gibbs School, Boston. Mr. Chatfield is the son of the late Mr. and Mrs. William F. Chatfield of Waterbury. He is a graduate of the Massachusetts Institute of Technology and served with the U. S. Naval Reserve Force in World War II. He is secretary of the United Aircraft Corporation and is a trustee of the Julius Hartt Musical Foundation." Congratulations, Chat! Remember June 18-20! — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass.; ROSS H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

• 1915 •

You are all invited to a Class Family Cocktail Party — bring everyone — at the Algonquin Club, 217 Commonwealth Avenue, Boston, Monday afternoon, June 14, 5 P.M. to 7 P.M. Whether you have attended the Alumni events in the afternoon or whether you are going to the Alumni banquet in the evening, you are urged to make every effort to come to this Class Family Cocktail Party.

What a Class! If you haven't already paid your class dues just flip your check in that envelope (no stamp necessary) and mail it to Henry. We've had a wonderful response, with an average of $6.50 per man, due to many $10 and $25 payments. Keep up your good work. On April 23 at the M.I.T. Faculty Club at Cambridge there will be another Class Dinner and we hope to have several fellows from New York come over for this. A detailed report will appear in next month's column.

Marshall Dalton sends me each year the annual reports of two companies of which he is President — Boston Manufacturers Mutual Fire Insurance Company and The Mutual Boiler and Machinery Insurance Company, two very impressive reports which reflect Jack's able and successful direction.

Repercussions from the big January 15 New York Class Dinner: Bill Campbell — "That was a fine Class Dinner. Congratulations to you fellows for getting all the crowd together and coming down from Boston. My best to Fran and those old rascals in Boston." (Bill must mean the lower element in Course I.) Jerry Coldwell — "A fine dinner in New York but I can't add anything new since then." Otto Hilbert — "It surely was nice to see so many of the Class at the New York Dinner. I had the pleasure of a great deal of sunshine in Mexico a few weeks ago in February. Regards to everyone." Ben Neal — "Had a swell time in New York with the gang. Couldn't you think of a better time to send out for class dues than the last day the New York State income tax is due and March 15 coming up? List me in good standing in the crabber's union." (But Ben sent a good check just the same.)

Ken Boynton — "Ever since the Class Dinner on the 15th I have meant to write to thank you for your very cordial note written from home the Saturday previous. It was really a very great pleasure for me to meet with you and so many other classmates that evening. It was surely a grand success, and could have been so only because you brought over such a strong contingent from Boston." Larry Quirk — "Sorry I had to miss the New York party. All is well down this way and business is good. If I'm still around, will see you at our 40th Reunion." Sol Schneider — "It was really good to see you and the rest of the boys at the dinner in New York. It was a good thing to start the ball rolling for the 40th Reunion. As you may recall, I told you that I had an operation last September as well as a bad attack of shingles. It takes a while to get over these, so I decided to take things easy and put in for retirement from the Civilian Personnel of the Navy. So now I am a man of leisure. I plan to be in Boston during the week of April 12 and shall try to contact you and some of the other boys — Abe Hamburg, Wally Pike and Henry Shiels. Will close with the best to you and Fran from Ann."

Louis Zepfler — "I enclose class dues and hope to be around to donate many more. At this time I am in the midst of plans for retirement after 35 years with Esso. The official retirement date is May 1 but that is preceded by a month's vacation so I actually step out about April 1. Our retirement program is quite well defined. We have a lodge on a lake in Minnesota which is habitable from May to November. In case any classmates would care to call we have a guest cabin for free with good sleeping and cooking accommodations. Our address there, from May 15 to

October 15, is Zephyr Lodge, Lake Minnewawa, McGregor, Minn. It is near Route 210 and 65 – 120 miles north of Minneapolis and 70 miles west of Duluth. All one has to do is to go to Mark's Bar in McGregor and ask the way. We plan to take two trips West this summer so be sure to write before coming.

"For winter living we have a small bungalow in Cape May, N.J., which we plan to rent during the summer months. During the winter months we hope to be able to travel in the southlands and make an occasional trip to New York. My daughter is married to a Flanigan and has her home in Lincoln, Mass. She and her husband sell swimming pools. My son is a graduate of Tufts College after over three years in the Marines during the war. He is now in the Credit Department of Esso in Elizabeth, N.J., is the father of another Zepfler, and has bought a home in Fanwood, N.J. We are looking forward to our 40th Reunion at Cape Cod next year. It was nice seeing you all at the New York Class Dinner."

Howard King is Chief Engineer for Mason and Hanger Company, Inc., 500 Fifth Avenue, New York 18. Herb Anderson sent a picture postal of a huge and formidable looking castle high on German mountain and wrote, "Sorry to have missed the New York Class Dinner but hope you received my cable. (We did, Herb, and got a great boot from it.) We recently drove 800 miles from Zurich to Munich to the Russian control border in Austria. See you soon. Regards to classmates." Funny man Al Sampson sent a cartoon with his class dues of an important guy addressing four others, "Here we are, four intelligent people . . . five, if you count Fred. . . ." Ah, me, I wonder what Al means?

Doug Baker, with a new address, P.O. Box 71, New Vernon, N.J., writes: "Enclosed is a drop of *eau de vie* for use by the guardians of the 1915 class Spirit to which you refer so appealingly. Please note the change in address from East Orange to New Vernon, N.J. We are on a secondary road between Madison and Bernardsville. If ever you are down this way and can stop in to see us, we are about half way between the church at the crossroads and the school, on Lees Hill Road. With best regards and good wishes." Fifteeners never lose their sense of humor.

Wink Howlett gives some good news on our 40th Reunion on Cape Cod in 1955: "Where were you and the gang at the Midyear Alumni Meeting at Walker? Only three of us there, Fannie Freeman, Brownie, and myself. Find check enclosed to help keep the wolf from the class door. Expect to sign up Coonamessett for 1955 Reunion next week. Best wishes." How that Ken Boynton gets around! Just received a quick despatch from him: "Not much new since last saw you at New York Dinner. Have been over to Portugal for a few days and am off for Colombia this week." With his class dues Boots Malone says: "I think I need more help than 1915 does – my daughter is getting married next month.". Congratulations, Boots, and thanks for the check. From 516 Walnut Street, Winnetka, Ill., Sam L. Otis wrote, with his class dues: "I was rather an obscure man in 1915. While attending the Harvard Graduate School of Architecture, I took two courses at M.I.T. which appealed to me very much. To accomplish this, President Maclaurin gave me a special status in the Class of 1915. This and the instruction were very rewarding and I have been much obliged since." The competition for leading the class Grandfather's League has been keen, with Chet Runels holding undisputed first place for some time with seven or eight. But by a late inning rally in the form of a son to Bill Sheils, Henry Sheils takes the lead with nine. Any other claimants?

Sure enough! On our February West Indies cruise on the *Empress of Scotland* Fran and I met an M.I.T. man, Franklin T. Towle'08, from West Roxbury, Mass. We spent the day together at Panama and although he and Mrs. Towle had been there before, they shared with us an admiration for this magnificent and impressive engineering achievement. After that famous New York Class Dinner, Pete Munn wrote, "What a Class! Never has so much been given to so many for so little" – which may well become a new Class slogan to supplement "help Azel." – AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

This is the month in which we hold our 38th reunion; and if this issue of the Review is in your hands early enough, let this be a reminder to you that one and all are welcome and whether you stay for the weekend or a few hours, we'll be happy to see you. Once again the dates – June 11, 12, 13, and the place – The Treadway Inn, North Falmouth, Mass. Come on down and have a good time. The five-year reunion is still a couple of years away and that's a long time.

Here are a few changes of address: Willard Crandall, 84 West 33 Street, Bayonne, N.J. Norman Vile, P.O. Box 177, Braddock Heights, Md. William Hamilton, 1008 E. Turner Street, Clearwater, Fla. Walter Metz, 256 Quadro Vecchio Drive, Pacific Palisades, Calif. Marshall Root, R.F.D. 1, Box 378, Tarpon Springs, Fla. Jimmie Evans, Box 397, Fair Lawn, N.J.

At this writing we have heard from enough of our classmates to indicate that we will have about the same size gathering at the reunion as we had last year – about 20 classmates. Good for an off-year reunion. We'll be writing about those who attended when we write up the activities of the reunion week end in the first issue of the new series next fall, so we'll by-pass them now and hit on comments of some of those who have indicated that they can't make it. Charlie McCarthy, "Sorry, but can't make it. Best regards to you and the gang." Warren Ames, "Due to sickness in my family I will not attend." Sorry to hear of this, Warren. Our best wishes for a rapid improvement. Ed Parsons, "My son is getting married that week end." Maybe next year, Ed. John Fairfield, "Sorry, our graduation is that same week end." Bob Wilson, "Sorry, it conflicts with my 40th at the College of Wooster, and I am president." Stew Rowlett, "Conflicts with my daughter's college graduation. Sorry." Willard Brown, "Sorry, can't make it, but will in '56." Arvin Page, "I'm saving up for 1956." Paul Austin, "Sorry I can't make it. Will write soon." Jack Heller, "Sorry, Cape too far away from California. Remember me to anyone interested."

Our Assistant Secretary is going to be a busy man right around reunion time, so he won't be able to be with the group. He must be in St. Louis from June 9 to 12 at the Annual Convention of the American Society for Quality Control. He is on one or two committees, including chairmanship of the Standards Committee, and this will probably mean some committee meetings on Saturday morning, the 12th. Then he has to be in Chicago a part of the following week where he will be the 1954 Marburg Lecturer of the A.S.T.M. at the annual meeting to be held in Chicago on June 14–18. Harold also has an important date early in June when on the 6th his youngest daughter is graduating from college. With such a heavy schedule, we can readily understand why at this particular time Harold Dodge doesn't hold forth much hope of getting to the reunion. With all these activities demanding so much of his time, our Assistant Secretary still manages to dig up news items about classmates. He writes: "Two or three weeks ago (early March) whom should I see in our own company dining room at the table next to me but Bob Burnap sitting with a group of our people, presumably on some R.C.A. Electron Tube activity. I had only a few moments to talk with him but he looks well and prosperous. The age of retirement is not showing in him particularly. Then again, last week who should walk on to the Christopher Street Ferry but Gil Gaus. We exchanged recent happenings, and he seems to be very well. Also, had a telephone call from Jimmy Evans, and he sounds as peppy as ever and says he fully expects to attend the reunion this year up on the Cape."

Earl Mellen writes: "It is rather a coincidence that you should have your sixth grandchild when my sixth arrived about the same time – to be exact on March 1. For the future, I probably have somewhat greater potentialities with my six children, but only time will tell, Due to a major operation of Mrs. Mellen's we have been pretty much confined this winter and have not been doing any traveling. We are hoping to get away for a short trip in April. It is rare that I bump into other members of the 1916 Class, although I did meet Bob Wilson at a Conference Board meeting about a month ago and sat at the same table with him. I have received your preliminary announcement of the class reunion this June and would indeed like to attend, but again cannot give you any assurance at this time."

Chuck Loomis sent in this report on the status of the Class of 1916 in the current Alumni Fund drive: "On March 31, 101 contributors had contributed $6,210 to the 1953–1954 Fund, while at the end of the drive last year 118 contributors contributed $6,186. The 1953–1954 Fund closes its books shortly. It is not too late to send another check, and it would help a lot if we could pick up, say, 10 more subscriptions of $100 each."

Here's a note from Steve Whitney:

"Thanks for your good letter of April which was a nice birthday present hearing from you, as that day I was a year older. I note the reunion dates but I expect my son to get married in Bethlehem, Pa., about that time, so it's doubtful that I can make it but will sure try to make the cocktail party June 14 at the Statler to see the gang."

We were very pleased recently to receive from Maurice Holland the results of one of his more recent surveys, entitled "Profile of a Research Executive at Leisure." There is a newspaper release covering the study and we thought you might enjoy reading it. Here it is: "The Industrial Research Executive – No Ivory Tower Hermit He! The myth that the science executive is an 'ivory tower hermit' was exploded today in a report entitled 'Profile of a Research Executive at Leisure,' prepared by Maurice Holland, industrial research adviser, of New York, and his research associate, E. M. Bryman. The report was based on a survey of 'what the research executive does as an avocation.' Sixty-five eminent science and technical executives, most of whom are vice-presidents and directors of industrial research throughout the country, replied to a questionnaire listing their hobbies. Members of the Industrial Research Institute were sent the questionnaire.

"Rather than hiding away in an ivory tower, the average research executive is of the 'rugged outdoor type, seeking recreation and diversion for the sheer enjoyment he gets out of it,' the survey revealed. Top men administering research for some of the nation's largest corporations indulged in a wide variety of hobbies during their free time, ranging from golf and fishing, gardening and shopwork, to intellectual and cultural pursuits, the survey disclosed. The 65 who answered reported hobbies in four main categories, physical and manual recreation out of doors, photography and travel, intellectual and cultural pursuits, and miscellaneous. Thirty-seven 'hobbied' in gardening and lawn culture and farming; 23 said they did shopwork, woodwork, cabinet making, carpentry, repairs and precision work; the hobby interest of four centered in design and construction of motor boats, railroad models, model houses and music systems; thirteen liked golf and fishing. Others were interested in boating and sailing, skiing and skating, hunting, swimming, tennis, camping, helmet diving, bridge, poker, chess, bowling and pool.

"On the aesthetic side hobbies of the research executives included music, painting and sculpture, literature, science, public and professional services, while others collected stamps, history books and old maps. Four expressed interest in dog raising, bird study and tropical fish. Others had hobbies such as ceramics, charcoal cookery, gunsmithing, weaving, loafing and winebibbing. 'Endless talent and genius abound in the individual listings,' Mr. Holland reported.

" 'Many unique hobbies are among them. . . . There is the philosopher and naturalist who studies 'man's thinking processes'; the psychologist who learns more about people while enjoying his game of poker; the 'romantic' who gets a lift out of poetry and fiction; and the practical minded who studies the stock market and finds it profitable! And last but not least there are those creative, constructive executives who find time to design and build motor boats and race them; and others who build model railroads and model houses and music systems! It is apparent that research executives seek in their hobbies some form of physical or intellectual diversion as a relief from pressure of their day's occupation,' Mr. Holland observed." How about the hobby of attending class reunions? That's a good one. More of us ought to try it.

That's it for now. Hope to see some of you at the reunion, and will be on hand next month with another column of class notes. – RALPH A. FLETCHER, *Secretary*, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York, N.Y.

• 1917 •

Your Secretary has sad news. A telephone call informed us that Ted Bernard died in the Phillips House on March 31 following a stomach operation. At the previous Alumni Council meeting he had complained of some pain and said he was under a doctor's care for it. None of us thought the matter so serious, however, until the final word came. Several of those in the Boston area were present at funeral services for him at the Waterman Chapel in Kenmore Square on Saturday, April 3. Ted has been in touch with everyone in the Class and has done much for it and, on its behalf, for the Institute. We shall miss him.

We are again indebted to Neal Tourtellotte for further news from the West Coast and are delighted to bring you up to date on Ted Burkhart and Al Niles:

From Ted: "After completing the special Naval Architecture course at Tech, and getting married, I was sent to the Norfolk Navy Yard where I was Junior Inspector of Naval Construction and then in the Hull Scientific Section. I had lots of fun in charge of inclining experiments and as civilian observer on two trial trips. In 1921 I resigned and came to Portland where I worked for the Willamette Iron and Steel Company as Superintendent of Materials – warehouse, stock, and materials handling facilities.

"In 1925 I went to work for the American Can Company, at their Northwestern Machine Shop as mechanical engineer and draftsman. I have been there ever since and am now their Chief Designer. This shop builds machines that seam the tops on cans after they have been filled with the food or other product. I have also worked on an automatic weighing machine that segregates filled salmon cans that are ⅛ ounce underweight at the rate of 260 or more cans per minute. Also a machine that fills cans with a given weight of salmon at the same rate.

"My life has been more or less uneventful but happy. However, a brief account of a plane trip I took in Alaska while there on business for the American Can Company, may be of interest because it was so different from traveling on a regular passenger plane.

"This was a small float plane based at Ketchikan and had a cabin that would seat seven including the pilot. After walking a 12-inch plank out to the plane and climbing through the door, I was assigned to the co-pilot's seat. I noticed that the pilot immediately removed the co-pilot's 'stick!' Behind me were a little Indian boy and girl. All other space in the cabin was literally jammed to the ceiling with freight – mail bags, express, laundry, bakery goods, tackle, tools, and 10 five-gallon cans of ice cream. After closing the door to keep things from falling out enroute, the pilot crawled through the window and we were off. At Klawock the pilot set down the plane in the lagoon, taxied over to the float, crawled out the window, grabbed the painter, jumped to the float and made the plane fast. About that time a couple of Indians sauntered down from the village and helped unload the plane, including the children. This was repeated at Craig, and we finally landed at Waterfall, our destination. Among the few instruments on the panel was an altimeter which I noticed had registered 600 feet for the entire trip. While we were resting on the water at Craig I called the pilot's attention to the fact that it still said 600 feet. He replied rather scornfully, 'Oh, that thing! That hasn't been working for two months.'

"P.S. At one time my son had a spare-time, but nation-wide business, building model railroad equipment – to exact scale, of course. We also had an O gage mountain railroad line among the trees in our back yard. It is still there but now badly in need of repair as it has been abandoned for more than two years."

Al Niles writes, "During the school year 1917–1918 I was at M.I.T. as an assistant in the C.E. Department grading papers for Professor Spofford in Structures and Professors Hewes and Russell in Hydraulics. At the same time I took courses in Structures under Professors Swain and L. J. Johnson. In the spring of 1918 I finally passed the physical exams and was given a commission in the Corps of Engineers.

"From June to September I was in training camp at Camps Lee and Humphries, emerging, through no fault of my own, but purely by the workings of seniority, as a Captain. After about a month of trying to train recruits at Humphries, I was sent to Camp Leach, D.C., where I was kept busy on a number of jobs until about Christmas. Then I was ordered to the Panama Canal Zone where I was stationed until November. Most of the time in the Zone I was engaged in mapping work on the edge of Lake Gatun. All resemblance between the actual lay of the land and the locations of the contours on the map produced was purely coincidental. I did not like Army life, however, so I resigned, was transferred back to the States and in November, 1919, I became a civilian again, legally as well as psychologically.

"In January, 1920, I accepted a job with Frank Hill Smith of Dayton, Ohio, and worked as a timekeeper on an addition to the National Cash Register plant. At that time I expected to become a construction engineer. While in Dayton I met B. C. Boulton, M.I.T. 1916, who was in charge of stress analysis work for the Air Service of the Army at McCook Field. He was not

only in charge of it, but was doing it all himself, and needed some help. The other two men who had been with him had decided there was no opportunity in aviation and had gone to work for the American Bridge Company. Boulton arranged for me to work at McCook with him.

"I started work there in March 1920 and stayed until 1927. For the first year I worked under Boulton, but then he was promoted to the position of designer, and I took his place as head of stress analysis. Most of the time while I was at McCook there were four men in the stress group. We not only made stress analyses, determining the sizes of members to be used in the airplanes designed at the field, but also checked the analyses of all designs purchased by the Air Corps, carried out research in the field of aircraft structures, and wrote books and articles on aircraft structural problems. The most important of the books was one called Airplane Design, Vol. 1, which was published about 1925. More volumes were planned but never written. Most of the time I was at McCook, my chief assistant was Joseph S. Newell, M.I.T. 1920, who returned to the Institute in 1926 to teach.

"Early in 1927 I accepted my present position as Professor of Aeronautic Engineering at Stanford. Before starting West, however, I worked in Dayton for about two months for the Consolidated Aircraft Corporation. In September, I came out here, and have been on the job ever since.

"Since both Newell and I were starting to teach airplane stress analysis, and no suitable textbook on the subject existed, we decided to write one. Our book, *Airplane Structures,* appeared in 1929. Right now the fourth edition is in press. Each edition has involved much rewriting, and that has been my chief activity outside of teaching my classes ever since the first edition appeared.

"Most summers I spend resting up from one school year and making preparations for the next one. In 1943, however, I spent the summer working on some structural analysis problems of the B-36 for the Consolidated-Vultee Company. Then in 1949 my wife and I took a trip to Europe." — NEAL E. TOURTELLOTTE, *Special Correspondent,* Seattle, Wash. RAYMOND STEVENS, *Secretary,* Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass.

• 1918 •

These notes are being prepared with something less than a furnace of living strength. Your scribe is actually encumbered by various wrappings including a flannel suffocating his neck and a shawl about his shoulders, all tenderly placed by a powerful nurse with the valid incentive of getting him over a long siege of pneumonia — which explains the absence of any notes last month. Among other unhappinesses of the experience is the confusion of our physician concerning the human anatomy. Looking elegantly down his commanding nose he ordered one cubic centimeter of liver extract per day, alternately injected into the somewhat worn cheeks of our rumble seat. Our liver is nowhere near there! However, despite all such confusion we are on the mend and therefore busily reporting.

Elliot Daland, a veteran of 37 years as a designer, engineering executive, and manufacturer of aircraft, has resigned as vice-president of the Piasecki Helicopter Corporation. Like everybody else whose bodily juices still flow freely, laying down top responsibilities does not mean retirement. Daland is 10 years older than most of us, but will still keep his hand in as an elder statesman and adviser to the corporation with which he has been associated since its founding in 1940. His early achievements won him a place in aviation history as the designer of the famous Keystone Bomber and the Huff-Daland duster in the 1920's. He has been a pioneer and prominent in the rotary-wing field since 1931, when he helped to design and to construct the first autogiro for Kellett Aircraft Company in Philadelphia. In the middle 1930's, while associated with the Pennsylvania Aircraft Syndicate, Daland engineered the world's first cyclic control system for rotors, and the first rigid rotor system to fly successfully. These features were incorporated in the XOZ, the Navy's first autogiro seaplane, also designed by Daland. He had a key role in the design and construction of the XR-1 helicopter for the Platt-LePage Aircraft Corporation after which he joined Piasecki, where he has contributed to all of the company's developments including the PV-2.

Spring is the time of town meetings and the election of local officials in New England. Evidently they had a spirited contest over the town assessor in the otherwise tranquil village of Milton, Mass. But when the voting booths had been dismantled, and the tumult over an eagle-eye supervised recount subsided, George Murray was declared re-elected by exactly 26 votes in a total of 4,377; seven less than the original tally but still undeniably a majority. Incidentally, George has had a firm grip on the office since 1939. We also see by the paper that the Reverend George O. Ekwall, rector of Christ Church, Waltham — once a chemist with us — participated in the University of Life series in Weston during Lent. This seems to us less magnificent, both in scope and effect, than the fact that George is chairman of the Board of Examining Chaplains of the Diocese of Massachusetts.

Should ours be a troubled depth of spirit because we are growing old, or were we wise enough to have learned long ago that by now we would increasingly be left with fragments of a broken rainbow? Then let us look to the past with gratitude and to the future with courage. Bill MacLeod died on February 21 in the Veterans Hospital at Jamaica Plain after a long illness. On January 25 Donald Merrill went to his reward after a gallant struggle to live which had gone on for years. Don was one of my best friends from the outset of freshman year. Gifted as few men are with dual ability in theoretical concepts and practical applications, he was a sweet, modest, lovable person with a delightful sense of humor. No sooner had Professor Park initiated us into the secrets of cam design than Don built a mechanism which, did you but insert an arrow for a handle into a heart-shaped cam and give it a twirl, would neatly inscribe upon a bit of paper the intertwined initials of himself and his girl. Imagine the stir that invention created at Smith College. Most of his professional life was spent doing development work for a glass company in Hartford. The men there say he cannot be replaced. He gave me some of the brightest memories I have to cherish. So let us look to the past with gratitude and to the future with courage. — F. ALEXANDER MAGOUN, *Secretary,* Jaffrey, N.H.

• 1919 •

Here's hoping the ones who were not quite sure of attending the Reunion have finally decided to join the gang and here's hoping that we have perfect weather and that our Thirty-fifth is our best Reunion.

From Honolulu Ed Pickop sent the news that he was to retire May 1 from his position as assistant manager and engineer of the Territorial Board of Harbor Commissioners. He will be on the mainland this year, will visit with Fred Hewes in California, but doesn't expect to get to the East. He writes, "Aloha to all 19's at the Reunion."

Since John Orcutt retired as a regular army colonel (slowly fading away, he says) five years ago, he has lived in Kentucky, Nevada and Massachusetts, and this winter made a two-month tour in Mexico. He does a little oil painting, "self-instructed like Eisenhower." He sends his best wishes for success of the Reunion and will attend if he is in the East in June.

We have learned through George McCarten that Dudley Murphy has built a hotel and restaurant, called the Holiday House, at 27400 Malibu Road, Malibu, Calif., which was designed by Richard Neutra. Dudley has extended an invitation for any of the classmates who get to Los Angeles to drop by and give him the pleasure of having a drink for old-times sake. Dudley has been directing pictures in Hollywood for the past 15 years and is planning on another picture this year. We all hope he gets to our Reunion at Wentworth-by-the-Sea on June 11, 12 and 13.

On their trip to Europe last year Ark Richards and his wife took their car and had a fast "look-see" of all Europe except Denmark and Portugal. Had a great time.

Lloyd Sorenson is now Production Manager of the Newport News Shipbuilding and Dry Dock Company. He is also Vice-president of the Newport News Building and Loan Association, Director of the Newport News Port Authority and past president of their Kiwanis Club and the James River Country Club. His son Lloyd is in the U. S. Army in Europe. One of his daughters is a graduate of William and Mary College and the University of North Carolina and the other has attended Agnes Scott College and the Newport News Business College.

Glad to have news from Yoshihiko Mito in Yokohama, where since 1950 he has been special consultant at M.S.T.S. West Pac. He has two daughters, one married and the other still at home. For hobbies he enjoys auction bridge and many kinds of indoor games. He sends his best regards to "Mr. Rhodes and other members" and says he would welcome a visit in Japan from classmates.

Captain Ed Saunders, U.S.N., is District Public Works Officer at Pearl

Harbor, with responsibility of new construction there and at Kwajalein, Wake and Midway. His outfit also runs a pool of 3,000 Navy-owned housing units plus 1,435 rental units, operates a water system pumping 17 to 20 million gallons per day, and the integrated telephone system of 8,500 lines, as well as performing public works service for several activities of the base. He and his wife and one daughter have been at Pearl Harbor for seven months of what may be a three-year tour and are enjoying it. He reports seeing many old friends at that crossroads of the Pacific.

Morton Smith finds that his radio-record business in Great Barrington, Mass., ties him down tight — his last vacation was in 1931! However, he has found time to be rather active during past years in Rotary and Masonic circles.

From Tim Shea: "I continue as vice-president and general manager of Sandia Corporation, Bell System subsidiary doing atomic weapons work for Atomic Energy Commission at Albuquerque. This is a great place to live. I am President of the Community Chest and active in many other community affairs. I see Fred Given often. Our five boys have all been married in the past 18 months and our lone daughter is now engaged. We have two grandchildren. Karl Rodgers and his wife were at Bob's wedding recently. Sorry we are so far away from the Wentworth. Best regards to all."

Ihei Sugimura writes from Tokyo that he was for 14 years professor at the Tokyo Institute of Technology, was then a consulting engineer, and at present is chairman of the Board of Directors of Meiji Machine Company, Ltd., a company specializing in flour mill and food industry machinery, and so on. His hobby is playing golf. He has two daughters, both married, the elder to a professor in the Fishery Department of Tokyo University and the younger to the vice-chief of the sales department of Jujo Paper Mill Company. His son, a graduate of Tokyo Institute of Technology, is an engineer for a manufacturing company.

Jim Reis writes from San Marino, Calif., that he retired last October from Northrop Aircraft and is now devoting most of his time to gardening and landscaping the lot adjoining their house which they recently acquired. Later this summer he hopes to do some traveling locally. Is sorry not to be able to make the Reunion.

Since he got out of the service after the war, Paul Sheeline has gone back into his business but takes life a little easier, spending more time relaxing in the Bahamas and Mexico during the winter and occasionally going to Europe during part of the summer. The rest of his leisure time he spends on his boat doing a little deep sea fishing, playing a round of golf occasionally and badminton fairly regularly. He says all this may sound as if there is no work in his life but that is far from true. His son Paul, after his tour of duty in the Air Force, went to Harvard Law School and since then has been with Sullivan & Cromwell, one of the leading law firms in New York. His grandson, not quite two, has not yet expressed any preference as to the career he expects to follow.

Your Secretary is looking forward to visiting with the Class at the Reunion. Work has accounted for most of the year, with some trips to the West Coast, Washington and Chicago for business and a vacation trip to Bermuda in April. — EUGENE R. SMOLEY, *Secretary,* The Lummus Company, 385 Madison Avenue, New York, N.Y.

• 1920 •

Word has been received of the death of Bradford J. Clark but without details at this writing. B.J. made his home at 8 Maplewood Road, Hartsdale, N.Y., and is survived by Mrs. Clark.

Al Burke was kind enough to show me a letter from Lancy Snow. Lancy lives in Millers Mills, N.Y., but is expecting to be doing engineering work that will keep him in Albany for a time. He has two daughters, one who graduated from Cornell last June and one who is majoring in mechanical engineering at the University of Maine and who plans to specialize in aeronautics. Judging from the picture of her in the Student Weekly at U. of M., M.I.T.'s loss is U. of M.'s gain. Her name is Muriel and she attended a summer session of M.I.T. She contrasted the friendly atmosphere of Maine with an entirely different atmosphere at M.I.T., where she says students and professors alike seem to resent having girls in their classes.

Mouse Meissner has moved into New York City from East Orange, N.J., and his address is 200 East 66th Street. Classmates prominently in the news are L. B. Hitchcock, Bob Patterson and Ed Burdell. L.B. is now president and managing director of the Southern California Air Pollution Foundation, 704 South Spring Street, Los Angeles, where he is going to supervise the job of smog control. He is going to set up a scientific cabinet made up of the best available technical director, chemist, physicist, engineer and meteorologist. He says that while results of this intensive research effort on smog will undoubtedly benefit other parts of the country, the main objective is to solve the problem in the Los Angeles Basin which is the greatest smog test tube in the world. Bob Patterson, whose recent promotion to the rank of Vice-president at John Hancock Mutual Life Insurance Company was reported last month, is also a member of the investment advisory committee of the Mutual Boiler and Machinery Insurance Company and the Boston Manufacturers Mutual Fire Insurance Comapny. Ed Burdell is the author of an article entitled, "Creative Design, or the Beauty Parlor Touch" which was published in the March issue of the *Journal Of The American Institute of Architects.* — HAROLD BUGBEE, *Secretary,* 7 Dartmouth Street, Winchester, Mass.

• 1921 •

Last call for your attendance at Alumni Day in Cambridge on Monday, June 14, and our annual 1921 class party that afternoon in Boston. Other events of the day are a stimulating conference on "The Next Ten Years" with Dr. Compton as moderator and Van Bush'16, Pen Brooks '17 and Ed Cochrane'20 as speakers. President Jim Killian'26 gives his State of the Institute address at the noon luncheon. Our class President, Ray St. Laurent, will be one of the ushers at the afternoon Open House at the Killian residence, with Jim and Mrs. Killian as the genial hosts who have made this function one of the most enjoyable of the entire day. All members of the Class of 1921 and their ladies are cordially invited to the social hour for our group at the Hotel Statler from 5 to 7 p.m. Photo-historian Bob Miller has some new pictures of interest to add to the old ones with which we customarily turn time back to discrete increments during the past 33 years, any one of which is always referred to as the "good old days." We hope that Ted Steffian will be on hand to continue as master of good cheer. You will find the room number posted on the class bulletin in the Rogers Building at Cambridge and on the Statler bulletin board. The evening Stein Banquet at the Statler will have William B. Given, Jr.,'08, Chairman of the Board of American Brake Shoe Company, as the principal speaker. This is our last opportunity to welcome you and yours to a most outstanding day at M.I.T. Join your old 1921 buddies and share with them the warm glow of satisfaction which we all derive from the friendly fellowship of these gatherings.

A card from Graciela and Helier Rodriguez, written 7,000 feet above the ocean, enroute from Havana to Miami, presages the continuance of their long record of regular attendance on Alumni Day. We hope you voted for Bill Sherry on the Alumni Association ballot, as an alumni term member of the M.I.T. Corporation. Everyone joins in congratulating Bill and expressing appreciation of his many years of distinguished service to the Institute, for which his nomination and election to this important post marks official recognition. Salaam! Technology has honored three members of our second generation club at the Institute by naming them on the Dean's List for the fall term of 1953. They are Peter C. Card'57, son of Tom and Mrs. Card of Fairhaven, Mass.; Malcolm M. Jones'57, son of Mrs. S. Murray Jones of Waban, Mass., and the late Murray Jones; and Franklin T. Flaherty, Jr., '56, son of Frank and Mrs. Flaherty of Swarthmore, Pa.

Charles F. Baish, a colonel in the Corps of Engineers, has retired as professor and head of the Institute's Department of Military Science, concurrently with his retirement from the Army. A graduate of West Point who received his bachelors degree in Course I with us in 1921, Colonel Baish has been in charge of the M.I.T. department since 1950. He is a resident of Belmont, Mass. Further checking of our records of sons of members of the Class who have attended Technology reveals the omission of the name of Garvin Bawden, Jr.,'46. Our apologies go to Mich and the young man. Are there any other corrections to the list which was published several months ago? A note from Grover C. Klein, a rear admiral, gives the address of his current assignment as APO 230, USRO—DEF, care of Postmaster, Paris 16, France. Mrs. Z. Carleton Staples, the former Amy B. Baker, gives her address as 198 High Street, Exeter, N. H.

Winter Dean is executive vice-president and treasurer of the General Trading

Company, 475 North Prior Avenue, St. Paul 4W, Minn., a consolidation of two venerable companies, Nichols, Dean and Gregg, established in 1855, and the Minneapolis Iron Store, started in 1888. With new warehouse and office building facilities as well as far-flung branches and representatives throughout the Northwest, the new organization distributes motor parts, supplies, tools and equipment for the automotive, industrial and agricultural fields and also tool steel and other steel supplies in the form of bars, sheets, shapes and plates. A letter from Wint tells of his activities in forming the new company and moving the activities of the predecessor firms to the new buildings.

Wint continues: "So far as my family is concerned, I certainly dispute Dug Jackson's claim to the largest family group in the current issue of the Review. My daughter is married and lives in St. Paul with her husband and four children. My two older boys both live in Los Angeles. They are both married and one has three children and the other, two. That makes a total of nine grandchildren to Dug's five. My oldest boy has quite a World War II record as a paratrooper. After the war, he returned to Yale and was graduated. The second boy is a graduate of the University of Minnesota. My wife, the former Muriel Smith'23, and I are still happily married after 32 years. We have two younger boys, one of whom is a freshman at Yale and the other attending the University of Minnesota. The only member of our Class whom I see is Ivan Lawrence, Vice-president of the Minnesota Mining and Manufacturing Company here in St. Paul. He came to M.I.T. after graduating from West Point and I did not know him well in school but we have become very good friends since he left the Army to join his present firm." We welcome Wint's news and hasten to add that the note on the size of Dug Jackson's family group in the March *Review* was entirely our own idea and not Dug's claim. We offer space and prominence of equal nature in future issues to Dug or anyone else regarding family groups. So far, Wint apparently tops the list with a total of 19. The Jackson family totals 14. Dug does claim a record of three sons and a son-in-law who are all engineers. What are your salient statistics?

George F. B. Owens, former executive of the Brooklyn Union Gas Company, writes from his new home, 300 Maple Street, Islip, N.Y., and says, in part: "I have more or less dropped out of the affairs of the business world. The Navy retired me as a commander because of a heart attack overseas. On the doctor's advice, my good company, the Brooklyn Union Gas Company, did likewise. So I built a small place on the water here in Islip and am learning to be a gardener, handy man and fisherman. Living out in the open agrees with me and I've never felt better. My son has come back from Korea and has presented us with a granddaughter, so that makes up for everything. I enjoy reading the 1921 column every month. It is a real pleasure to see how far some of the boys have gone in the business and scientific world."

Raymond A. Snow gives a new mail address of P.O. Box 10174, Raleigh, in our own Tarheel home state of North Carolina. He continues: "My change in mailing address has no particular significance other than to indicate that our two daughters are now married and have left home and that we have decided to try apartment living for a spell after maintaining a seven room house for 18 years. I am still District Manager for the Carolina Power and Light Company, with 31 years of service as of May, 1954. I am enjoying my work with the M.I.T. Educational Council and have interviewed quite a few youngsters interested in Technology as well as participated in college day activities of high schools in this immediate area. The stock reaction to the Institute is 'too hard and too expensive.' I have been able to straighten out quite a few of them and to leave them with a better understanding of our school.

"My older daughter, Josephine, is living in Lynchburg, Va., where her husband is director of athletics at the Virginia Episcopal School. They have two children, a girl who is 21 months old and a boy of five months. My younger daughter, Martha, lives here in Raleigh. Her husband is associated with his father in the construction business. They have a son who is three months old. I enjoy a game of golf occasionally but my greatest relaxation is in collecting books and reading some of the classics which I scorned in my youth. Have also cultivated a great interest in classical music and for many years we have attended the Metropolitan Opera while on its spring tour in Atlanta. There are relatively few Tech men in this part of the state. I run across one or two now and then but not often."

We have received some 12 issue of the *Rogers Reporter* within the last month, each containing four to six closely typed pages of the activities, experiences and impressions of Saul M. Silverstein on his current trip to Europe and the British Isles as a member of a C.I.P.M. team which is concentrating on marketing. We wish it were possible to quote at length from these interesting accounts. Tubby Rogers certainly would be proud if he could see the handiwork of the many accomplished writers who have developed remarkable technique through his early guidance, including Slivver, Rufe Shaw, Dave Woodbury, Ed Whitman, Dug Jackson, the late Curt Gardner, S. Paul Johnston and scores of others whose work has been mentioned in these columns. At the risk of incurring the wrath of the Review Class Notes Editor for product advertising by mentioning it, your Secretary observes this month the fifteenth anniversary of his part in the production of the first commercial selenium rectifier ever made in this country, a device which has now achieved considerable importance. A member of the small group which undertook the project in 1938, we are currently serving as assistant manager and chief engineer of the Semiconductor Department of Federal Telephone and Radio Company, the International Telephone and Telegraph Corporation division which is probably the world's largest producer of these popular metallic rectifiers and diodes.

It is with profound sorrow that we record the passing of two members of the Class and extend sincerest sympathy to their families. Dr. Clarence Henry Powell of Amityville, N.Y., died on May 13, 1951. J. Ernest Dewey Clarkson of Havertown, Penna., died on February 16, 1954, after a brief illness. Born July 16, 1898, in Waltham, Mass., he prepared for Technology at Waltham High School and the Huntington School. At the Institute, he was active in the Mechanical Engineering Society and was a member of the Rifle Club. Following graduation with us in Course II, he joined the Atlantic Refining Company in Philadelphia and ultimately became executive operations engineer in charge of steam generation and distribution. He was a 32nd degree Mason and a member of Monitor Lodge of Waltham. In Havertown, he was a trustee of the Overbrook Baptist Church. He is survived by his wife, Gertrude Cummings Clarkson; a sister, Mrs. Florence E. Adams, and a brother, Chester E. Clarkson, both of Waltham.

Hope to see you in Cambridge on June 14. — CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N.J.

• 1922 •

Arnold E. Howard of 14 Robbins Road, Lexington, Mass., has been appointed by the Massachusetts Commissioner of Natural Resources to the position of chief of recreation in the Department of Natural Resources. Howard, who has been in the State service since 1932, will be responsible for the operation, maintenance and improvement of the 42 State forests and parks devoted to camping and other forms of recreation. The total area of his domain comprises more than 175,000 acres of woodland and beauty spots ranging from the Cape to the Berkshires. In this position Howard will direct a staff of 150 employees and he will be responsible for the expenditure of $462,000 authorized by the legislature for the beautification and development of 17 of the State parks and forests. Howard is married to the former Mildred Isherwood of Lowell and they have a son, Allan, who is now in the Air Force.

Minot R. Edwards was appointed early in April by European Headquarters, U. S. Army, to the position of Supervisor of Procurement for Army Ordnance Corps. He left this country late in April for his station at the U. S. Embassy, Rome, where he will function as deputy chief of procurement for the Mediterranean Basin area of South Europe. For the past three years Edwards has been employed by the Army Ordnance at the Boston Army Base as engineer and chief of Cost Estimating Branch of Procurement. During World War I, he served in the Signal Battalion of the Yankee Division and in recent years has been senior vice-commander of Weymouth Post of the American Legion. Edwards' wife and daughter, the latter a senior in Weymouth High School, have gone with him.

A post card dated March 29 arrived from Oscar Horovitz carrying the postmark Sao Paulo, Brazil, reading "Moving completely around South America at 360 miles per hour. Have met following classmates so far: Buenos Aires, Argentina—

Roberto Ottonello, Course VI; Montevideo, Uruguay—Luis Artola, Course VI. Enjoyed their fine South American hospitality."

Mrs. Eleanor Johnson Spillsbury has recently been named a director of the Woburn National Bank, making her the first woman bank director in Woburn's history. Mrs. Spillsbury, after graduating from Wellesley studied for two years at M.I.T. in the Physics Department. She subsequently taught physics and mathematics for four years at Chamberlayne Preparatory School in Boston. During World War II she was a statistician at the Remington Arms plant in Lowell and later a technician in a Navy underwater explosives research project at Woods Hole. Her other activities have included positions as treasurer of Woods Hole Consumers' Cooperative, Inc.; treasurer of the Woburn Visiting Nurses' Association and a member of its board of directors for six years. She was also former commissioner of the Woburn Girl Scouts and is at present treasurer and member of the board of directors. In the business field she is now associated with the law firm of Johnson & Johnson in Woburn as an accountant. Colonel Kenneth G. Merriam is professor of aeromechanics at Worcester Polytechnic Institute and operations officer of the 1036th Army Reserve Specialized Unit of Worcester. During this past winter he gave a series of eight lectures at W.P.I. about various phases of military service. During World War II he served with the Antiaircraft Artillery School at Ft. Bliss, Texas, heading its guided missiles department. For his work on this project he received the Legion of Merit and Army Commendation Ribbon. Vice Admiral Leslie C. Stevens is the author of a book entitled *The Threat of Soviet Imperialism* published by The Johns Hopkins Press, 1954. Stevens, who is now retired, was for three years, 1947–1949, Naval Attaché of the United States Embassy in Moscow. He is one of the few Americans speaking the Russian language who has traveled extensively throughout the Soviet empire.

Your Secretary waits expectantly for results from the second paragraph of President Rundlett's letter to the Class dated April 13.

New addresses: Richard J. Sholtz, 510 Arch Street, Chillicothe, Ohio; C. William Perkins, 3 Fox Meadow Road, Scarsdale, N.Y.; Ray C. Burrus, 406 North Thomas Street, Arlington 3, Va.; Hugh M. Doyle, 243 Vidal Drive, San Francisco 27, Calif.; Winston A. Gardiner, 930 NW 25th Place, Portland 10, Ore.—C. YARDLEY CHITTICK, *Secretary,* Heard, Smith, Porter and Chittick, 41 Tremont St., Boston, Mass.; WHITWORTH FERGUSON, *Assistant Secretary,* 333 Ellicott St., Buffalo 3, N.Y.

• 1923 •

Believe it or not, the Class of '13 blocked us by sewing up the Oyster Harbors Club for the week end immediately preceding Alumni Day in 1958. Your Committee is now searching out another location with general sentiment favoring Pine Orchard, Conn., midway between Boston and New York. Our 30th Year Reunion was held there very successfully.

Clippings have been received announcing the sudden passing of Loop Barrett, X, who died following an abdominal operation in an attempt to prevent a rupture. Barrett had been sales engineer for the Graphite Metalizing Corporation of Yonkers, N.Y. Previously he had been plant manager for the American Dyewood Company, Belleville, N.J. He was a member of the Engineers Society of Upper Montclair, N.J. and a deacon of the First Congregational Church of Montclair. Our sympathy goes out to his wife and family. In spite of an extensive search by the Army Air Rescue Squadron in Panama, no trace has ever been found of the plane in which Harold E. Golding, II, disappeared last July 17 during a flight from Nicaragua to Bolivia. Memorial services were held for Golding at the First Congregational Church, Cambridge, Mass. on March 20, 1954. Charles Alan Brantingham, XV, died suddenly on an airliner between Boston and Chicago on March 25th. No other information is presently available.

"Indestructible" Herb Hayden, II, played on the Old Timers Hockey Team at Boston Arena, February 20 and helped hold a team of undergraduates to a 6-6 deadlock. Herb was credited with an assist for one of the goals. How do you do it, boy? Among the four Pittsburghers who were honored as outstanding personalities of 1953 by the Pittsburgh Junior Chamber of Commerce, were Dr. and Mrs. Bernard Lewis, X, the second couple to be so cited since the Chamber was organized. Mrs. Lewis is an accomplished concert pianist professionally known as Eunice Norton and has won many prizes for recitals in leading cities. Dr. Lewis is head of Combustion and Explosives Research, Inc., and is an explosive consultant to governmental agencies. In addition to his degree at M.I.T. and Harvard, he was recently awarded an honorary degree of Doctor of Laws by Cambridge University in England for outstanding contributions in the field of combustion.

According to a release from the Standard Oil Development Company, Edward H. Clendenin, XV, having completed 30 years' service with the Company was presented a service award on March 8. He assisted in the design of the Aruba Refinery where he later became chief engineer. He has been responsible for various field constructions including the first fluid catalytic cracking plant at the Baton Rouge refinery. Among his extracurricular activities, he served as a member of the Plainfield, N.J., City Council in 1946–1947. Calvin M. Bolster, XIII, who recently retired as rear admiral in charge of naval research has been named Co-ordinator of Development of the General Tire and Rubber Company of Akron, Ohio. Congratulations to all—we are proud of you! — HOWARD F. RUSSELL, *Secretary,* Improved Risk Mutuals, 15 North Broadway, White Plains, N.Y. WENTWORTH T. HOWLAND, *Assistant Secretary,* 1771 Washington Street, Auburndale 66, Mass.

• 1924 •

Only a few more days now before we'll be foregathering at Pine Orchard. You've already had a listing of those who definitely plan to be there, and if our 25th is any criterion we can expect several last-minute additions. If you should happen to be one of these, a call to Frank Barrett at the Hotel Sheldon any time from Thursday P.M. on the 10th to Sunday will get you quick transportation from either New Haven or the Pine Orchard station. Or as a matter of fact there are taxis at both places.

A couple of cryptic cards arrived from South Carolina. The first from Charleston showed a picture of a strong-looking iron gate and said, "Got a file and now working on this gate to get thru in time to see you in June. Seen Mrs. Joe and the brats lately? I'll catch up with 'em soon — Ole Joe." And then a week or so later, another card from Myrtle Beach, "Count on me in June — Ole Joe'24." Looks like he'll be there. Another card, one of those impressive over-size things, had a beautiful scenic view of Alcatraz Island, San Francisco. It read, "Back home again after my 14th trip around the world. First east-bound trip around. Last trip was from Bahrein to Manila and Saigon. Now don't expect to get to the 30th but will send movies if you want them. In for two to three weeks. Si." Chief Engineer Simonds never does seem to plan his trips to suit our reunion dates, but at least we'll get a look at some of the places he's seen.

A couple of offspring married this spring. The Paul Cardinals announced the marriage of Joan Ruth to Donald F. MacMurray in Montclair on April 24, and the Richard Sheas of Syracuse announced the marriage of their daughter Doris Edna to James R. Brosseau on the 4th of the same month.

On April 1 the New York Building Congress met at the Hotel Astor with John F. Hennessy presiding. Jack had a reunion warmup party at his home in March. Similar well-attended meetings were held in Washington and Boston. Some of those who showed up had never before attended any sort of a class meeting. Several of them said it would not be their last. Arthur J. Kemp, our first class president as freshmen and long-time New York advertising mogul, has moved out to Detroit. He's now with C.B.S. Carlo Vicario, who has been in Rome for some time, has followed in Dent Massey's footsteps and come back home. The ex-mayor of Saddle Rock also journeyed to the West Coast, but since his address is the Alexander Hamilton Hotel in San Francisco we're not at all sure how permanent it is. One more move, although not well documented. Edward H. McArdie, one of our Chemistry graduates, has gone to Manchester, N.H., from New Haven.

Sorry to have to report that on March 31 Dwight W. Forster died in Natick, Mass. He had been in ill health for several months. For the past eight years Forster had headed the Reece Corporation's metallurgical department in Waltham. He is survived by his wife.

Outstanding political event of recent weeks was the appointment by the New Hampshire Governor's Council of Blaylock Atherton to the state Public Utilities Commission. Blay, who has held most elective jobs in the state including President of the Senate and Acting Governor,

was named a permanent member of the Commission. He had just recently announced his candidacy for the Governor's Council, but now this is out maybe he will have time to join us at reunion. He won't have to be out beating the bushes for votes.

The 30th Reunion Warmup in Mexico City was eminently successful. Present were Max Ilfred, Clarke Williams, Jack Nevins, Nish Cornish and Chick Kane. And while we were at it we added an honorary member to the Class, Don Carlos Contreras, one of Mexico's top architects and a panel speaker at the M.I.T. Mid-Century Convocation. We can assure you Don Carlos has all the attributes of a worthy '24 man.

And now that all the warmups are over, here comes the real thing! – HENRY B. KANE, *General Secretary,* Room 1-272, M.I.T., Cambridge 39, Mass.

• 1925 •

The Spring Dinner of the Class of 1925 was a grand success and was held as scheduled at the M.I.T. Faculty Club, Wednesday evening, April 14. President Ave Stanton presided in his inimitable manner and, in view of the authority vested in him, declared all of our honored guests honorary members of the Class of 1925 for the evening. These first honorary members of the Class of 1925 consisted of President Jim Kililan'26; Ray Bond'23, President of the Alumni Association; H. E. Lobdell'17, Executive Vice-president of the Alumni Association; Paul Heymans '23, President of the M.I.T. Club of Belgium; and the featured speaker, Erwin H. Schell'12, Professor of Industrial Management at M.I.T. Jim Killian spoke briefly concerning the general status of the Institute and Ray, Lobby and Don brought greetings from the Alumni Association. Dr. Heymans commented briefly on the standing of M.I.T. in more distant lands and brought the greetings of the Belgian Club to us. The meeting was adjourned to the Schell Room where Professor Schell told us about the Sloan School of Industrial Management. The following classmates were present: Bill Arnold, Arnold Bailey, Sam Caldwell, Hand Colby, Frank Duncan, Doc Foster, Dave Goldman, Fred Greer, Greg Gregory, Ben Hampshire, Bob Hodson, Frank Mulcahy, Ken Proctor, Fred Rice, Harold Robichau, Ken Robie, Ave Stanton, Clarence Thulin, Frank Turnbull, Wally Westland.

We had expected Jim Howard, Sam Glaser and Mac Levine, but they were unable to make it at the last moment. Rusty Blair had planned on coming but at the last reading was in bed with a bad back. Joe Kaplan was called to a business meeting at the last moment and had to cancel his reservation. While Ed Kussmaul was the first to make a reservation, he was also the first to cancel, presumably because of his having gotten into politics in the town of Westwood where he is now serving on the School Committee. Ed found himself quite active in connection with new school buildings in the town and the first thing he knew, he found his name on the ballot, and he went in by a vote of two to one. Bob Ashworth wrote in, expressing regrets that he could not come to our meeting. He indicated that this is a year of conventions, having just returned from two of them, one at Pinehurst, N.C. and another at Biloxi, Miss. By this time, he has already attended two more, one at Boca Raton, Fla., and the other at New Orleans, La. These are to be followed by a textile machinery show at Atlantic City. Willard Allphin was unable to attend since he had to be in Denver on the evening of our meeting, while Don Tabor was to be in Chicago. Don also informed us that his oldest daughter, Betsy, was married on February 20 to John M. McGrew, Jr., who graduates from M.I.T. this June. They are now living in Boston but future plans seem to depend on Uncle Sam. Don also felt that the following item which he had recently come across in the paper could well apply to the members of the Class of 1925:

"Looking around at our class reunion, it appears as though we are entering the Metallic Age, gold in our teeth, silver in our hair and lead in our pants."

Ave Stanton took a well-earned vacation during the latter part of March and reported he had an enjoyable time in Florida, having spent some time basking in the sun with Tod DeFoe. He also spent some time with Tom Grier'27, Headmaster of the Grier School at Birmingham, Pa. From the looks of some programs which have been brought to my attention, it appears that Henry McKenna, who is with the Employer's Group Insurance Company in Boston, is an extremely busy man these days. He chairmanned the General Industrial Session of the Thirty-Third Annual Massachusetts Safety Conference and Exposition held in Boston March 22–23 and also participated in the presentation of group winner awards at that conference. On April 5, at Worcester's Fourth Annual Industrial Safety Exposition, Henry presented an address, "Cause, Cost and Cure of Industrial Accidents" and again took part in the presentation of certificates. My good friend, George Blonsky has sent me a recent issue of the *Mohave County Miner,* published at Kingman, Ariz., which carried pictures of George in his mining garb underground in the Wothree Tungsten Mine which he is in the process of managing and developing. More information on this at a later date.

A letter from Brad Nichols, who teaches school at Neah Bay, Wash. He informed me that his wife, Barbara, had passed away from a heart attack on February 25th and I am sure all members of the class will approve of my having expressed to Brad the sympathy of all his classmates. Although much belated, I am sorry to report the death, on May 29, 1945, of Herbert Ellwood Bussom. We received this information only this April. – F. LEROY FOSTER, *Secretary,* Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

This month I am going to let you in on one of the very nice parts of this job of being Secretary. Every once in a while I hear from different members of the Class and it is such a pleasure that I shall quote practically verbatim from some of these letters. This, I am sure, will be a relief to you from my usual chatter and it will give me a little spare time to work on our coming Star Boat Races. I mentioned briefly in a previous issue that our little yacht club has grabbed off the biggest yacht racing event of the year – the North American Star Boat Championships. As usual Smith ends up holding the bag but I guess if I didn't like that sort of thing I wouldn't be doing it. Here and now I'll give you the dates so that those of you high "falutin" yachtsmen with cruising boats such as Dick Parsons, Austin Kelly and Herb Beckwith can plan to be on hand provided I don't have to find you a spot to anchor – with 50 Stars in tiny Rockport harbor. The dates are August 22 to 28, a race each day with one day out for resting.

But to get back to the letters, the first one is a real volume from Tom Green and I'll be hanged if I will cut it – it's too good. As a matter of fact it makes him eligible for Class Secretary so when you want to fire me, you now have an alternate. Here's Tom's letter: "Dear Sage of Pigeon Cove, Last night we had a late meeting of the most interested parties in the M. I. T. Club of Hartford, or such as could get there (four in number), and I promised to write you. I made Marblehead for overnight last summer, but got so involved that Pigeon Cove was basely bypassed, although my hopes had been running high right up to the last. However, there was a rendezvous of the Cruising Club one night at the Camden (Maine) Yacht Club and there was Austin Kelly and his wife. They had worked it just right, having some friends cruise their boat down from Rye, turning it over to the Kellys who would get two weeks sailing where sailing is best. I think the deal was to be worked in the home direction too. For years I worked to persuade my boat owner friend that I should take his boat down east for him, but he died before he was convinced, and the boat was sold to a total stranger. Maybe he did right after all.

"Your monthly efforts in the back pages are the most enjoyable that I read with the possible exception of Spike Adriance's effusions in the Phillips Bulletin. However, his are of a unique bebop style, quite inimitable, where yours are, perhaps I shouldn't say it, more reminiscent of Nathaniel Hawthorne and therefore more than a little appropriate to their geographical source as well as having more genuinely lasting worth. It is regrettable that class notes seem not to originate around here. It would be a satisfaction to offer you two or three lines that you could throw in sometime in an emergency. However, to do so might sabotage the easy flow of entertainment and philosophy that now prevails–and woe betide the saboteur at next reunion. Mark Greer, who is located down the river from here and who represents a variety of manufacturers of first rate electrical equipment, came in to see what I was up to and found me swinging as usual in my swivel chair. He has the respect of the chaps in our company whom he sees, and it's a source of pride to be able to say I knew him when.

Elliot Bidwell is a substantial citizen of this peaceful and prosperous community, is said to be active in his church, of which I have only hearsay knowledge of course,

and runs a very impressive hardware business, Bidwell Hardware Company. To judge by the appearances, the business is burgeoning, each year seeing more ornamental displays of store front and hardware, coupled with a substantial warehouse and facilities out in back. Elliot is everywhere — I tried to sneak in the back door from his parking lot last Saturday, only to climb a short flight of steps and find him looking right at me with his usual jovial smile. This resulted in a great waste of his time while he sold me a couple of iron hooks and said his son Bruce has just gotten engaged to a girl name of North, the daughter of the Congregational minister in Andover, Mass. One would assume she is as good as her fiance, who is a very fine young man indeed, as I can attest, having had the honor to live five doors from him since his cowboy days. Bruce is stationed at Bayonne, N.J., where he is winding up the last few months of his duty in the Navy learning, no doubt, something about hardware in one form or another.

"I heard that Bill Forrester was moving back to New York, that city where they bend more fenders in a day than an atom bomb would bend in Hartford. Maybe he did, but I'm so immolated in my little office that he came and went before I had a chance to see him more than once or twice. Louis Darmstadt showed up last year at our annual meeting, and I hope may be lured again. The last time he came in response to a letter I wrote cursing him properly for non-attendance. It made me feel good to see him. Haven't seen Eb Haskell for a long time. He was very sick a year or so ago, as I think you knew.

"This is winding up my 20th year with the Emhart Manufacturing Company of Hartford. When occasion arises to write letters from there, they put 'Manager of Special Product Sales' at the bottom. It hasn't anything to do with my work which is to be handy-man in the Central Research, Development and Engineering Department, and is a short string of words composed by a kindly boss who from the goodness of his heart used it to conjure me a raise one time long ago. Lately, I've been concerned with administration of CPFF research and development contracts with the government, mostly the Bureau of Ordnance, Navy Department, and look forward to the time when, in my cups, I can recite 26 pages of general provisions whereby the government ensures that no contractor can cheat the peepul nor do anything else whatever except by the utmost efforts abetted by 'interpretation' by governmental functionaries. Already I can say WHEREAS so resoundingly as to surprise a waiter out of addressing me in French. There is a certain advantage in that, just so long as the waiter doesn't know I'm loaded. Hoping you are the same, Tom."

Since Tom mentioned Bill Forrester we wrote Bill to be brought up to date on his activities and quote from his reply. "My new life started last fall, and I became a partner of Merrill Lynch, Pierce, Fenner and Beane on January 1, 1954. I am in the Underwriting Division of the firm, associated with George Leness, which in itself is a small '26 reunion. John Spence is also here in our New York office. We are living in Greenwich, Conn., and at the moment my wife is deeply involved with plans for a house which we expect to build shortly. I managed to catch up with a few members of the Class, including a 'tall story' session with Bird Kelly and Bill Millar a few Saturdays back, and we extracted a promise from Bill Millar to show up at our 30th Reunion, which, I believe, will be his first appearance. I also had a reunion with John Drum last summer when we met up at a camp in Maine when we were checking in some kids. John Wills was in New York not long ago, and is continuing to keep the Northern Trust on the straight and narrow path. I hope you will give me a call when you are in the 'big city.' All the best, Sincerely, Bill."

The clipping services have brought us news of a tragic airplane accident in which one of our most distinguished classmates was killed. Bob Mattson was aboard the BOAC *Constellation* which crashed at Singapore on March 13. Bob, a bachelor, was satisfying a desire which many of us have had at one time or another. He was taking a trip around the world and was to have met Bill Rivers in Calcutta three days after the crash. Bob, who was 52, graduated from Annapolis before attending M.I.T. Upon graduation from the Institute he joined the Northern Pacific Railway and had worked up to the key position of general superintendent of transportation. Bob had the unusual distinction of having held commissions in both Army and Navy. During World War II as an Army colonel he operated Army railroad facilities in the Middle and Far East. In 1952 he took a leave of absence to be consultant to the government of Eire on railroads. Bob's life was full of accomplishment. It is most unfortunate that tragedy has dropped the curtain.

With one more issue of the Review to be published before our summer hiatus we will have to save the rest of the material on hand for that issue. Hoping to see many of you on Alumni Day, June 14. — GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., 140 Federal Street, Boston, Mass.

• 1927 •

Dick Cheney has become director of Market Research and Promotion for the Glass Container Manufacturers Institute, of which he was formerly the West Coast manager. This means that Dick has moved to New York, and the way this metropolis is, I'll use these notes to express the hope that we can get together sometime.

The New Haven Register carries the interesting account of George Darling's career and his recent appointment as chairman of the Health Division of the Council of Social Agencies. It also carries a picture showing George still very much unchanged from the Scabbard and Blade days. The following is quoted from the Register: "From 1932 to 1943 he was associated with the W. K. Kellogg Foundation of Battle Creek, Mich., an organization aimed at advancing child welfare and health. He became president of the Foundation in 1940. During World War II, Dr. Darling was vice-chairman of the division of medical sciences of the National Research Council, where he handled the administrative duties necessary in mobilizing medical scientists for the war effort. In 1945 he became executive secretary of the National Academy Research Council and the following year came to Yale. The new health division chairman is a member of the American Public Health Association, the Academy of Political Science, and the American Association for the Advancement of Science."

W. G. Payne, President of Payne and Company, Dayton, Ohio, has been Honorary Secretary of the Alumni Association since 1946 and is now a candidate for the Association's nominating committee. Professor H. G. Houghton of M.I.T. has been reappointed to the Subcommittee on Meteorological Problems of the National Advisory Committee for Aeronautics. The Sangamo Electric Company of Springfield, Ill., has named E. A. Leach a vice-president. He was formerly manager of the Engineering Department of that company and spent the first 17 years of his business career with General Electric. The "Car of Tomorrow" was the subject of a recent talk by Deke Crandell at the First Congregational Church of Waltham. Deke is chief engineer and assistant vice-president of the Liberty Mutual Insurance Company of Boston. Keep writing me of your happenings to keep the column rolling. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

• 1928 •

On the financial page of the New York *Herald Tribune* for April 7, 1954, appeared the following announcement: "A. A. Archibald has been elected vice-president, special products and services at Jones and Laughlin Steel Corporation. Mr. Archibald was director of the special products and services division." Our congratulations to you, Arch, on your well-deserved promotion and our best wishes for your continued success!

Although it is a year since the event, those who attended the twenty-fifth Reunion still look back to the occasion with pleasure. Some have asked how the reunion came out on expenses. Jim Donovan, who did a superb job as treasurer, gives the final story in this summary report: "In attendance were 146 classmates, 91 wives, one husband, one mother, one mother-in-law, and 78 children, for a total of 318. Total reunion income was $14,892.04 consisting of $12,252.04 paid in, $1,565.00 from sale of Class Books, $615.00 in contributions, and $460.00 from ads in the Class Book. Total expenses were $13,723.38, composed as follows: Baker House — rooms, $850.75; bar, $1,025.14; Sunday Tea, $160.01; buffet luncheon, June 13, $991.93; buffet suppers, June 12 and 14, $755.69; children's expense, $81.37; Class Book, $2,452.31; Class Dinner, $1,362.35; committee expenses, $291.30; entertainment — Pops, swimming exhibit, and so on, $926.00; Ladies' Dinner, $600.68; miscellaneous expense, $461.13; publicity, $711.59; refunds, $315.00; services, $330.00; Shore Dinner, $2,408.13. This left as excess of

income over expenses, $1,168.66." By vote of the Executive Committee of the reunion, $1,000.00 of the excess was transferred to the Class of 1928 Endowment Fund which was given to M.I.T. at the time of our reunion. This addition brings our total fund to $76,885.22. The remaining balance of $168.66 has been turned over to George Chatfield, Secretary-Treasurer of the Class, for incidental expenses of his office.

When these notes appear there will be still time to make arrangements for attending the Alumni Day Dinner on Monday, June 14. There is always a good turnout of twenty-eighters for a most enjoyable evening. As in the past, a room will be reserved for us so we can meet and chat before and after dinner. If you can possibly make it, plan to be there! — GEORGE I. CHATFIELD, *Secretary*, 49 Eton Road, Larchmont, N.Y. WALTER J. SMITH, *Assistant Secretary*, 209 Waverly Street, Arlington, Mass.

• 1929 •

By the time this issue of the Review reaches you we hope everyone will be packing their bags for the trip back to Tech.

George Meyers, VIA, has forwarded several letters that he had received from classmates with lots of news about themselves and others. Winfield Bearce, VIA, is distribution engineer with the Central Maine Power Company in Augusta. Win writes as follows — "I spent some time with General Electric, and a year at Boulder Dam. In 1934 I came with Central Maine Power Company at Lewiston as a Power Sales Engineer and was transferred to Augusta in 1943 in the Distribution Engineering Department. The boss retired in 1952 and I have been in charge of the department since. The work includes supervision of all distributing engineering, meter engineering and operation of our two-way radio system. In 1935 I was married to Marguerite Murlless of Belmont whose acquaintance I made while at Tech. We have one son who is a Junior at Kents Hill School. He is now 16 and 6'5" tall, with an interest in basketball, but not too sure about the future beyond the military duty all the boys have to look forward to now."

Larry Moses, VIA, is in Albany with the New York Telephone Company. He has three children ranging from first grade to college. Clarence Worthen, Jr., has resigned as class treasurer because of ill health. We regret Chuck's having to give up the job at this time. Gordon Williams, I, has accepted the position of Acting Class Treasurer. Gordon is Associate Professor of Hydraulics at the Institute. Jacob Mark, V, is Assistant Director of Research, Dewey and Almy Chemical Company of Cambridge. He writes of his doings: "It hardly seems that 25 years have slipped by. They have been busy ones. First with John D. Lewis Company in Mansfield, starting as chemist and then later in charge of their Synthetics Resin Division. Back to the Institute in 1932 for graduate work and then on to Dewey and Almy Chemical Company in 1934 to help build it from an infant to its present 14 plants scattered around the globe. Between times we managed to get married, get four youngsters started on the road and help Uncle Sam get the Synthetic Rubber program started. We've done our share of traveling — getting pretty well around this country and Canada as well as a couple of trips to Europe including acting as the representative of the American Chemical Society at the occasion of the first German postwar Chemical Society meeting at Heidelberg in the Spring of 1947. We stayed on to help the Department of Commerce survey the German Chemical Industry. The spare minutes, here and there, have been pretty well taken up in church and youth activities, together with Rescue Mission work among the city's 'Down and Outers.'" Earl Abbe, II, is in charge of Metallurgical Unit, Research and Development Division, Springfield Armory. Earl is living in Longmeadow, Mass., and recalls his doings since 1929. "After graduation I returned to the Institute in the Steam and Hydraulics Lab. Next job was at Moore Drop Forging Company in Springfield — the depression sort of washed up this job so I got married. Two or three miscellaneous jobs then up to Springfield, Vermont and the Jones and Lamson Tool Company where I worked in design, chemical and metallurgical lab, heat treat department and ended up in charge of Lab and Heat Treating Department. With the outbreak of the war we returned to Massachusetts and various jobs at the Springfield Armory. Nearly every year manage to make a motor trip, couple of times to California and few winter trips to Florida are the most outstanding. While in Vermont built a house on a shoe string, turned out darned good, too; putting the finishing touches on cottage on lake in New Hampshire — do a little on the home, too."

J. Gordon Carr, IV, has his own architectural office in New York City. He writes briefly: "Had the Tech Fellowship to Europe which permitted me to slide into the depression easy-like. But when I slid — I was as deep as anyone — deeper than many, being an architect. Borrowed some dough — went to Harvard Business School, and as far as I know, am the only practicing architect to graduate from there. I never regretted going there and the combination was excellent. Have had fun and satisfaction in my work." Gordon has one son and is living in Greenwich, Conn.

Marshall David, II, is with the Boston Consolidated Gas Company as Development Engineer of Distribution. He writes as follows, "My work and World War II have been responsible for my many interesting travels in the U.S., Africa, and Europe. In spite of the rigors of front line Ordnance support, I had the good fortune to visit and see many interesting things in the countries I passed through. I have been in the gas utility business exclusively from the time we graduated. I have worked at some time or other in nearly every phase of the business, in other words, industrial engineer, construction, heating, master mechanic and mechanical engineer of manufacturing plant, assistant superintendent of service, natural gas conversion co-ordinator, development engineer, and so on. Experiences are a subject that would take more space and time than is allotted here. My son is interested in engineering and hopes to enter M.I.T. in a few years. This is a very sketchy account of myself but in 25 years it would be rather difficult to cover the broad subjects listed in a short space when men write books on even less."

Fleming Hurt, IV, is a practicing architect with offices in Waynesboro and Lexington, Va. He is married, has two children, and lives in Waynesboro. Saburo Kamei, X, is Professor of the Kyoto University, Department of Chemical Engineering, Faculty of Engineering. He has four children and five grandchildren. Samuel J. Levine, VIA, is general manager, Home Heating and Cooling Department, General Electric Company. He lives in West Orange, N.J. George Long, III2, is manager of Material and Process Engineering Division, Frigidaire Division of General Motors Corporation. George has four children and lives in Dayton, Ohio. Charles Johnson, XA, is living in Longmeadow, Mass., and has five children. He writes of his past — "Took 10-A 1929–1930. Worked as assistant in Chemical Engineering Department until June, 1933. Have been with Bigelow-Sanford Carpet Company since July, 1933. Am engaged in chemical-engineering work in the Products Research Department. Am interested in handicrafts in general and metalcraft in particular. Am at present treasurer of both the local Springfield Guild of Craftsmen and the State of Massachusetts Association of Handicraft Groups."

Ezra Hill, VI, is a design engineer with General Electric Company and writes — "I have worked here in Fort Wayne for General Electric ever since I graduated. I worked first in manufacturing and later in engineering. I now do developmental engineering on high voltage power supplies for electrostatic air filters. I am the leader of my daughter's Girl Scout troop. If anyone has any good ideas on how to make 13-year-olds like work, it would be helpful." Hyman Fine, I, is chief, Planning and Reports Branch, Engineering Division, Corps of Engineers, Norfolk, Va. He writes: "25 years of engineering work on surveys, design, construction and operation of multiple purpose river developments. The jobs have been interesting, head-achy, yet satisfying. All sorts of problems had to be resolved in the operation of these huge structures, from the water requirements for the successful spawning of an anandramus fish called the striped bass, to the protection of tungsten mines from the backwaters effect of reservoirs. My wife has been my constant companion and together we have raised her brother, a veteran of World War II, an artist, and a recent graduate in the field of architecture from the University of Virginia. Last year we completed the building of our home. It is contemporary in design, complete with redwood siding, thermopane windows, electric heating, flat roof, and so on, and we are happy in it."

Charles Holdrege, VI, is chief engineer, Metropolitan Utilities District, Omaha, Nebraska. Hazen House, VI, is system planning engineer, Power Division, Aluminum Company of America, Alcoa, Tenn. He also teaches at the evening graduate school of the University of Ten-

nessee. Carl Howard, IVA, is a designer for Cram and Ferguson, Boston. He lives in Somerville. Malcolm MacGregor Hubbard, VI, is living in Marblehead, Mass., while assistant director of Lincoln Laboratory at M.I.T. Mal writes of his doings and travels – "On leaving Tech went to work for the Bell System, in an operating company, New England Telephone and Telegraph Company. Worked all over New England in various phases of Plant. Originally on outside plant engineering, next on Central Office maintenance, lastly on dial equipment engineering. In 1941 left on leave of absence to join recently organized Radar Lab at M.I.T. (Radiation Laboratory). There worked on many engineering phases of microwave systems. Became associate head of Transmitter Division and hired most mechanical and electrical engineers employed in the Lab. On close of Lab by O.S.R.D. in 1945 received offer to stay on at M.I.T. Resigned from Bell. Worked in Instrumentation Lab and Nuclear Science Laboratory. Was assistant director of Nuclear Science Lab until 1951 when went on leave to organize Lincoln Laboratory for classified research for Department of Defense. There now. Work for military has caused me to travel a lot in North America including the far north (83°). Will probably be in north next summer, perhaps missing reunion."

Renato Fracassi, IIA, is supervisor, Bell Telephone Labs, Murray Hill, N.J. He lives in Chatham, N.J., and writes as follows – "I worked for four years after graduation with the American Telephone and Telegraph Company. This involved transmission development for long distance telephone circuit. The job required extensive travel through the mid-south and west as far as the Pacific Coast. In 1934 my group was transferred to the Bell Labs where we have continued the same type of work. During the war we worked on the development of radar systems and associated components. My work for the last few years was climaxed by the acceptable assignment of delivering a paper on 'Type ON Carrier' at the A.I.E.E. convention in Vancouver, B.C., in the late summer of 1953. Vacations have been spent with my family on the coast of Maine and New Hampshire where the water isn't bad for bathing – my daughters tell me."

Edward Higbee, V, sends a resumé of his doings: "Left M.I.T. in 1933 with Ph.D. in organic chemistry. Tough time to find a job; no great clamour for chemists as now. Became chief chemist at F. H. Jackman Company in Boston in 1933, blending whiskey and rums, quick aging of whiskey. Very interesting. 1935–1942 at Dennison Manufacturing Company in Framingham, Mass. Conversion of paper in all forms – printing, coating, laminating, impregnating. Research, new product development, production, patents. 1942–1949, General Latex and Chemical Corporation in Cambridge. Same type of effort in latex and plastic compounds. Started doing a good deal of sales work. 1949–1950 set up my own business, Martika Laboratories, Inc., in Cambridge. Cosmetics and consulting. 1951–1953, vice-president and technical director of Testworth Laboratories, Chicago. 1953 to date, technical director of Central Solvents and Chemical Company, vice-president of its manufacturing subsidiary, Neochemical Company, both of Chicago." A newspaper clipping from Holyoke, Mass., notes that Dan O'Connell, I, celebrated his 47th birthday and his company's 75th anniversary by being chief marshal of the St. Patrick's Day parade in that city. – PAUL F. DONAHUE, *Secretary*, Conti and Donahue, 239 Commercial Street, Lynn, Mass. FISHER HILLS, *Assistant Secretary*, Dewey and Almy Chemical Company, Cambridge, Mass.

• 1932 •

One bit of current news was a postcard from Joseph Ivaska reporting his fifth child, first daughter, born February 9, 1954. Joe has four sons, ranging in age from 11 to four. His wife, Helen McLaughlin, is a Wellesley girl. Joe has been a development engineer for Cincinnati Milling Machine Company since February, 1953. Home address: 2448 Maplewood Avenue, Cincinnati 19, Ohio.

Willis H. Moore, Jr., is supervising engineer for Celanese Corporation of America, and with his wife and son, Willis, III, lives at 15 Anderson Road, Greenwich, Conn. After leaving M.I.T., Willis did graduate work at New York University. He is a member of the Manhattan Rifle and Revolver Association, and has sailing as a hobby.

One of our self-employed classmates is Sam Nordlinger, who is an industrial and engineering consultant in Washington, D.C. He received his M.S. in M.E. at Pennsylvania State College. In 1937 he married Sally Haines and they have two sons, Bob, 9, and Gerry, 1. The Nordlingers live at 400 Oliver Street, N.W., Washington 15, D.C. During the war, Sam was a lieutenant colonel in the Air Corps.

Also self-employed is Erskine Roberts, whose company is E. G. Roberts and Associates of Indianapolis, Ind., design and construction engineers. He is a member of A.S.E.E., I.A.B.A.S., and Western Society of Engineers and participates in many civic activities: Y.M.C.A. (former board member), Boy Scouts, District Volunteer P.T.A., Indianapolis Chamber of Commerce, KAPsi, SPP, Congregational-Christian Church, and is a 32nd degree Mason. Reading, card playing, checkers and photography round out his busy life.

Toiling to keep us on wheels is James J. Robson. Jim is manager, Tire Engineering Department, Firestone Tire and Rubber Company, Akron, Ohio. With his wife, Winifred Ruth Sanders, who went to U.C.L.A., and their two daughters, he lives in Ira, Ohio. During the war he was a lieutenant colonel in Ordnance.

Harner Selvidge is director of Special Products Development at Bendix Aviation in Detroit. He married Eloise B. Campbell (University of Missouri) in 1933 and they have two sons and two daughters. Harner is interested in football officiating and lists design and execution of mobiles as hobbies.

Al Stewart did graduate work at Boston University and is now an instructor at Bradford Durfee Technical Institute. He and his wife, Clara O. Martin, recently spent an enjoyable and interesting summer visiting England, Scotland, Norway, Sweden, Denmark, Netherlands, Belgium, Luxembourg, Germany, Switzerland and France. No wonder he reports traveling as a hobby, along with photography. He has been C.D. Regional Consultant and is a member of the Adams Club and A.S.M.E. The Stewarts' address is 28 Hanover Street, Fall River, Mass.

Also in the teaching profession is Elmer H. Stotz, who is Professor of Biochemistry at the University of Rochester. Al received his Ph.D. from Harvard University. He has approximately 60 publications to his credit; is consultant, U.S. Public Health Service; active in scouting; and finds time for gardening and fishing. He is married to Doris M. White, and with their five children, lives at 840 East Avenue, Rochester, N.Y.

I hope everybody will complete and return Tom Sears' questionnaire. We'll send out follow-up postcards to those that don't. We want to make these notes as representative of the Class as we can. – ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich.; *Assistant Secretaries:* WILLIAM H. BARKER, 45 Meredith Drive, Cranston, R.I.; ROLF ELIASSEN, Room 1-138, M.I.T., Cambridge 39, Mass.

• 1933 •

Dick Fossett has just reported his arrival in Long Beach, Calif. He returns there for Procter and Gamble after spending the last few years at their plant in Dallas. At last reports, Dick was still house hunting; we expect Dick to send us, for publication in the fall, a dissertation on the relative merits of California and Texas. Speaking of Texas, Dayt Clewell who is director of research for Magnolia Petroleum in Dallas, dropped in recently (complete with Texas hat) for a pleasant visit. Dayt has been taking the 16-week advanced management program at Harvard Business School. Dayt did not say so, but our suspicion is that getting back to school after 20 years is a bit difficult, particularly since there are scheduled classes between the daily cocktail hours. If this sounds like a veiled compliment to the M.I.T. School of Industrial Management, it could be.

John King, Chief Engineer of Prepakt Concrete in Cleveland also stopped in for a chat recently on his whirlwind trip to Boston. John looks as youthful as ever. He calls Cleveland home, though he spent some months last fall in Japan and he is now preparing for a two months tour in South Africa. Coming closer to Cambridge, your Assistant Secretary went bowling recently at a local neighborhood club and found Bob McCormack as one of the opposing team. Bob has been with the fabulous Raytheon Company for several years and now heads one of their divisions; he lives in Waban with his wife and youngsters. Carl Mohr takes the annual prize for his much appreciated help in providing news of the Class! Recently he reported "I have seen Sam Hopper at the meetings of the Indianapolis M.I.T. Club. I have been elected the first president of the recently formed Wabash Valley Instrument Society. At the National Plant Maintenance and Engineering Conference in Chicago, I met Ted J. Jones of our

Class. He is the assistant maintenance superintendent at the Du Pont Dana Plant, that is 30 miles north of Terre Haute, Ind. He is married and has a son who is six years old. He has been with Du Pont most of the time since he left school. Perhaps some of the chemical members of our Class will come to Chicago this September to the Chemical Show. They might get in touch with Chuck Thumm in Chicago and if enough of them will be there we might get together some evening."

Omar H. Somers reports that he is glad to be back in New England. He is now superintendent, Quality Control Engineering, Arms and Ammunition Division, Olin Industries, and is now living at 116 Buell Street, Hamden, Conn. Good luck, Omar, in your new assignment! We have had word too that Colonel Leslie A. Fletcher is now research fund director of the American Society of Tool Engineers, with headquarters in the A.S.T.E. Building in Detroit. He took part in the Salerno and Normandy landings during the war and among other accomplishments, he developed continuous manufacture of machine gun links, tank track parts and stainless iron recoil cylinders while stationed at the Rock Island Arsenal.

For those of you who did not see *Time* magazine of February 15, here are some of their observations on Bob Winters that demonstrate his mounting political prestige in Canada: "Suave, personable Bob Winters, who in five years of Cabinet Service (currently Public Works Administrator) has proved himself an able administrator, has also become an eloquent debater and a shrewd operator in the House of Commons." In the same article, Bob was mentioned as one of the likely successors to Prime Minister Louis St. Laurent! If my abacus hasn't slipped a cog, this is the next to last set of notes for the current year. In behalf of your class officers, may you all have a relaxing and refreshing vacation in the coming months. But please spare 15 minutes to tell your Assistant Secretary something about life in your tent! — GEORGE HENNING, *Secretary*, 330 Belmont Avenue, Brooklyn 7, N. Y. R. M. KIMBALL, *Assistant Secretary*, Room 24–204, M.I.T. Cambridge, Mass.

• 1937 •

It may seem strange to you but we are now getting ready to head southward for a 10-day vacation in Florida. You see, it's still April when this is being written. I got quite a kick out of Jerry Salny's letter about his difficulties in sending out his letters, "I have run through the list of the members of V, X & XV and am faced with the question posed by the theatrical agent (when an artiste described his act of lion-taming which ends with the lion actually biting off his head and eating it) who said 'Yeah, but what is he going to do for an encore?' However, I regard our class lethargy as a challenge, and will think of something. But my activities for Huck Company leave me in a constant state of exhaustion. I've been trying vainly to get a couple of days off since last summer."

Archie Ahmadjian in a note to Joe Heal tells us that Alden Acker is now president of the Hycon Manufacturing Company in Pasadena, Calif. They are producers of photographic and electronic equipment. Archie tells us " . . . seeing quite a bit of Al Acker. He and his wife flew to Mexico City and Acapulco in their private plane. Can you imagine that? I've gone up with Al before on trips to Palm Springs. He is a very good pilot."

I see that George Rosen is chief aerodynamicist at Hamilton Standard, division of United Aircraft Corporation, and Al Reinhardt is a project engineer at Hamilton at their plant at Windsor Locks, Conn.

Some big news for us is that Dave McClellan is no longer a bachelor. On January 9 he was married to Mrs. Margaret Allen Sloane at Newton Centre, Mass. We had almost given up hope but he finally made it and we all congratulate you and wish Mrs. McClellan all happiness and a big welcome to the Class.

The following are a few notes from the business and industrial world: Dick Ewert is now general sales manager of Illinois Gear and Machine Company in Chicago. Raymond Dreselly is now working in the office of synthetic rubber, R.F.C. on loan from the Humble Oil and Refining Company of Houston. Newman Gates was named works manager of the Ansonia branch of the American Brass Company in Conn. Lawrence Hough was named works manager of the Bridgeport plant of the Singer Manufacturing Company. Ed Hobson has been placed in charge of sales for plastics products for the Monsanto Chemical Company. Joseph Smedile has been transferred from the District Engineers' Office in Jacksonville, Fla. to become chief of the U. S. Army mission to Bolivia and principal engineer adviser to the Bolivian Army. Herbert Weiss has been appointed head of the newly established Weapons System Analysis Department of the Northrop Aircraft, Inc. of California. In addition to serving on numerous military committees and scientific groups, he is the author of several technical articles in the field of automatic control and servomechanisms and holds many patents in this field. One of his inventions, known to the using troops as the "Weissight," served to increase the killing power of anti-aircraft weapons in the latter years of the war. He also was commended by former Pres. Harry S. Truman for a technical presentation given by him during a visit of the President to Aberdeen Proving Ground. To all of the above fellows — heartiest congratulations!

Jack Bennett, a pilot for Pan American World Airways, was presented with a miniature "Freedom Bell" for his flights during the Berlin blockade and other flights to aid this Soviet-encircled city.

Leonard Seder, who is now a statistical engineering consultant, gave a talk on "A New Method of Process Capability Analysis" before the Western Massachusetts Section of the American Society for Quality Control. Phil Dreissigacker was the speaker for the Derby and Shelton Board of Trade and his topic was "Atomic Energy for Industry." Phil, as you know, is division engineer of the sugar mill and special machinery division of Farrel-Birmingham Company, Inc. and he is responsible for the company's activities in the field of atomic energy. James MacLean, who has been prominent in the development of television, was the guest speaker before the Framingham Chamber of Commerce. To all the above, well wishes also.

By the way, Bob Fischel lives at the University Club in Washington, D. C., now. I'm sure he would be glad to see any of you who have business there.

My own business is booming now and I hope you have seen my ads in *Popular Science, Popular Mechanics, Auto Age* and *Motor Trend.* — WINTHROP A. JOHNS, *Secretary*, 34 Mali Drive, North Plainfield, N. J.

• 1938 •

Lou Bruneau has asked us to extend through the notes an invitation to all members of the Class who will be in the Boston area on Alumni Day. He plans to have a suite at the Hotel Statler and the Class is invited to meet there for cocktails before the banquet. Class members are welcome regardless of their plans for attending the banquet.

Our Assistant Secretaries, Dick Muther and Harold Strauss, have been very helpful this month in supplying news.

Dick writes: "Frank Kearney was in Kansas City recently on a big sales meeting. We got together a couple of times. Frank is sales representative for Butler Manufacturing Company. He has three children now, and is still living in New Orleans. Frank says Adam Gambel — whom we all thought had disappeared — is also in New Orleans. He and his wife have one child.

"On a recent skiing trip to Colorado, we stopped in Denver long enough to see Emmett Ryder. He and family are settled there. Em has a business planning and equipping kitchens — new and old — with coverage in several states. He has long since given up his well-known dance band.

"We Muthers are busy in Kansas City. Automatic merchandising is growing and as management engineer for the world's largest manufacturer in the industry, I am kept going all the time. Have also been president of local chapter of Society for Advancement of Management and we are currently leading all 58 chapters in performance competition."

And Harold's letter reads: "It now being 10 months since our 15th, it seems that it is about time that I did a little assistant secretarial work and reported on the activities from this very nice part of the world. Speaking about this nice part of the world, it seems that Bert Grosselfinger came to the wrong part of the country for a fertilizer angel; go south young man not west. As you know, Ralph Lebow and family moved out here lock, stock and stein and have become confirmed C. of C. boosters for Pacific Palisades. He has acquired a beautiful new home overlooking the Pacific (he can see Catalina) and has the Santa Monica mountains for a backdrop.

"Jack Rosenberg left G. E. the latter part of February and packed up his family to become another convert to California luxury. Jack is now associated with Electronic Control Systems, Inc., whose president is Len Mautner '39. Howard Britton is still with North American and when last

seen was trying valiantly to act childish and smash nice new aircraft parts in the test labs of North American. Yours truly has been a busy little bee since returning from the reunion. In August, I returned to the consulting engineering business mainly in all types of aircraft accessories with pneumatic and hydraulic units accounting for most of the business. If all goes as well as indicated most of the new planes coming out in the future will have one or more of our units on them. The M.I.T. Club has some very ambitious plans for this year which should help to bring some more of the 1938 gang out of hiding. If, as Lobby said on his last visit here, 1938 is at last becoming an active Class, then we should expect to see a few more of the fellows around here."

Paul Black tells us that "for those who were not at the Reunion last June the vital statistics are: Peter, aged 11, Paula, aged 7, Stephen, age 3½, and my long-suffering wife Ruth. For the past few years have been Engineering Manager at Sylvania's Boston Engineering Laboratory engaged primarily in research and development of military electronic equipment — radar and so on. Get around a good deal but seldom see a '38 man in my travels. Have quite a few post war M.I.T. men working for me (makes me feel young). Spare time spent with the human dynamos listed above and, of all things, amateur dramatics."

To complete the personal communications we have a note from Harry Hollander: "Two children now seven and 10 years old respectively, Joanne and Laurie. Working at A. Hollander and Son Ltd., 995 Wellington Street, Montreal — Dyer. Hobby: gold and silver hand wrought jewelry. Ruth, my wife, makes enamel on copper jewelry and does ceramics. We enjoyed the article on Tiles in the last issue of the Tech Review. Skiing up here excellent. Home address: Harry B. Hollander, P.O. Box 54, Senneville, Quebec."

A news release announces that "Robert V. D. Campbell, a member of the Class of 1938, has been named Associate Director for Office Equipment Products at the Research Center of Burroughs Corporation in Philadelphia. He was appointed to the recently expanded Technical Planning Staff of the Burroughs Research Center, which is now being moved to a new $3,000,000 air-conditioned laboratory in Paoli, Pa."

A news clipping from London states that A. J. C. Wilson, Senior Lecturer and Director of the Viriamu Jones Research Laboratory at the University College of South Wales and Monmouthshire, Cardiff, has been appointed by the College Council to the Chair of Physics. Other news items include the information that Al Wilson was a speaker recently at a Congregational Laymen's Conference in Holyoke. Al serves as director of the Massachusetts Congregational Laymen's Fellowship and as a corporator of the American Board of Foreign Missions. As many of you know he is plant manager of the A. O. Wilson Structural Company.

Curt Hoerig has been named assistant to the vice-president in charge of manu- Company in Milwaukee. He has been with the company about a year. Fran Hagerty is in the news again. We mentioned him earlier in connection with the small-boat kits he was producing. To stabilize the business he added furniture kits to his line, and now we find he has turned completely to the latter. — DAVID E. ACKER, *General Secretary,* Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

• 1939 •

By the time some of you receive this issue, many of us will be on our way to Snow Inn. We hope that you are one of the many that plan to attend.

At this writing we do not know whether or not the hotel will be filled so there may be room for last minute reservations. If you think you can come, drop George Beesley a line or wire to see if there is space available. See you June 11 at Snow Inn, Harwichport, Mass. — GEORGE BEESLEY, *Assistant Secretary,* 38 Homestead Road, Lynnfield Center, Mass. MICHAEL V. HERASIMCHUCK, *Assistant Secretary,* P.O. Box 495, Bethlehem, Pa.

• 1940 •

The '40 notes recently appear to be either of the feast or famine variety. This month they are more on the famine side. Pat Hurley, who is a professor in the Department of Geology at Tech recently was in the news headlines by determining the age of fossils of primitive plants from the Northern Shores of Lake Superior. These plants which are the oldest yet found in the world are over two billion years old, presumably to slide rule accuracy.

Paul Murphy has recently transferred to the Aircraft Nuclear Propulsion Department of G.E. in Cincinnati, Ohio, as manager of Facilities Design and Construction. Previously, he was with G.E. at the Hanford, Wash., plant. *Science News Letter,* in the February 27 issue, carried an article on sterilization of food and included much of Sam Goldblith's work, as well as that of other Tech men in planning to harness nuclear reactor waste products for commercial food sterilization. Dino Olivetti has gone into public speaking with an address before the Advertisers' Club of Cincinnati. Dino heads his own company, the Olivetti Corporation of America, makers of automatic calculating machines.

Just as these notes were being prepared, word was received that John Pellam, who has done outstanding work in low temperature physics at the National Bureau of Standards, has been appointed professor of Physics at the California Institute of Technology. — Don't forget to write to Al and help expand this column. — ALVIN GUTTAG, *General Secretary,* Cushman, Darby and Cushman, American Security Building, Washington 5, D. C.

• 1941 •

Arthur Dore writes from Short Hills, N. J. "Was on active duty with Army Ordnance from June, 1951, through February, 1953. Returned to Civil Aeronautics Administration as chief, Electronic Engineering Section. Resigned June, 1953, to accept present position as member of Technical Staff, Bell Telephone Laboratories." Thanks, Art. Any sign of Ray Ketchledge down there? Amelio D'Arcangelo reports being appointed last June as assistant professor in the Department of Naval Architecture and Marine Engineering at M.I.T. Further job changes: Payson Tseu has joined Pastushin Aviation Corporation in Los Angeles as preliminary design aerodynamicist; he was previously with Lockheed. He holds a master's degree from Cal Tech.

Lieutenant Colonel Stan Smolensky has been transferred to Belgrade, Yugoslavia, from the Redstone Arsenal at Huntsville, Ala., where he was assistant chief of the National Procurement Division, which group is responsible for procuring guided missile and rocket parts and components. A design for the proposed Cherry Hill Project of RCA Victor in Camden, New Jersey, by Vincent Kling, has won an award citation in the industry category of an architectural design competition conducted by *Progressive Architecture,* national architectural magazine. Dr. Robert Purvin spoke at a luncheon meeting of the Petroleum Engineers Club of Dallas on "The Effect of Production Methods on Gas Processing." He is a senior member of Purvin and Gertz, an engineering firm.

Once again it becomes my unpleasant task to report the passing of a member of the Class. The following is from the New York *Times* of March 27: "Edward A. Hamacher of 120 North Broadway, Irvington-on-Hudson, since 1946 an associate physicist at Philips Laboratories, Inc., in Irvington, died Thursday at Tarrytown Hospital. He was 36 years old. Mr. Hamacher, who was born in Boston and graduated from . . . Technology, did graduate work at Brooklyn Polytechnic Institute and was on the Cyclotron Staff at M.I.T. until he came to the Philips Laboratories. He was on the speaking staff of the World Congress of Crystalographers. Surviving are his widow, Florence Barker Hamacher; a daughter, Brenda; his father, Harry A., of Miami; and a brother, John, of Boston." Those of use who knew Ed feel deeply the loss of a good friend, and we extend our sympathy to his wife and family. — IVOR W. COLLINS, *General Secretary,* 28 Sherman Road, Wakefield, Mass. JOHAN M. ANDERSEN, *Assistant Secretary,* Saddle Hill Farm, Hopkinton, Mass.

• 1942 •

This has been a quiet month for the Class of 1942. Very little has happened to us, been affected by us, or if it has it has slipped the Technology News Service and me. Except for Jimmy Klein — what started out to be (and was) a grand skiing vacation in Switzerland ended up as a very busy and effective business trip as well.

A report from Baltimore tells us that W. G. Duvall, who received his M.S. with us, has been named superintendent of industrial-labor relations of the Breeze Works of the Western Electric Company. In addition to his work at W.E., Mr. Duvall has served with the National Production Authority and has taught at Johns Hopkins University School of Engineering.

On the front pages a short while back was John D. Iams, First Secretary of our U.S. Embassy in Prague, Czechoslovakia. Jack figured prominently in the release of

John Hvasta, a young American one-time consulate employee. Mr. Hvasta had been imprisoned on "espionage" charges in 1949. He escaped from prison two years ago and lived underground inside Czechoslovakia until he reached the asylum of our embassy six months ago. Negotiations carried on by the Ambassador and Jack Iams finally resulted in Mr. Hvasta's departure. We all, I am sure, congratulate Jack on his fine work and look forward to hearing more about his experiences behind the Iron Curtain when he comes back home.

A release from the United Aircraft Corporation reveals that there are three Class of '42 men among the 24 Tech men at the Hamilton Standard Division: Wilfred H. Shaw, C. Branson Smith, and Courtenay Crocker, Jr.

The Alumni Register records that Richard L. Mohan is now a Captain in the Navy stationed at the Bureau of Ships in Washington, D.C.; Alice M. Heath is now with the Monterey County Health Department in Salinas, Calif.; Lieutenant Reginald B. Cocroft, Jr., has moved to Rockville, Md.; and that Louis E. Stouse, Jr., is now living in Long Beach, Calif. — Louis Rosenblum, *Secretary,* Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

• 1943 •

By the time you will be reading these notes the Alumni Reunion will be just around the corner, with its usual gay activities of luncheon in the Great Court and the Stein-on-the-Table Banquet. Our Class always has a good representation, and I shall be looking forward to seeing a lot of the gang there. Nothing special has been planned by our Class for this year, but we may come up with something next year.

Ward J. Haas wrote that he has returned from a tour of duty as an attaché to the United States Embassy in London. He is now working in Washington, but expects to return to private industry in the near future. His address is 1005 Greenway Boulevard, Falls Church, Va. Other new addresses are: Sid Atlas, 1520 Banks, Houston, Texas; Victor Darnell, 118 Mooreland Hill Road, Kensington, Conn.; Peter W. Forsbergh, Jr., 6 Union Lane, Rockport, Mass.; Harold J. Gershenow, 17 Old Pond Road, Levittown, Pa.; Robert L. Rorschach, 2027 East 14th Street, Tulsa, Okla.; Morton L. Schultz, 8 Bradford Court, Rockville Center, N.Y.; Lt. Comdr. Paul B. Souder, Box 404, Agana Guam, M.I.; Major Charles S. Townshend, 2nd Engr. Combat Bn., A.P.O. 248, c/o PM., San Francisco, Calif; Herbert G. Twaddle, 1712 So. Keeler Street, Bartlesville, Okla., and George H. White, Jr., Evanston Hotel, Evanston, Ill.

My wife and I enjoyed a week end recently visiting with Jim and Jane Hoey in Newton, Mass. Present there at a Saturday night party were Bob and Pat Anderson, Gene and Shirley Eisenberg, Bill and Gloria Verrochi, and Kemp and Detta Maples (in absentia because of baby sitter problems).

Jim Hoey's Class President's letter, which you may have received by now, offers the startling statistic that only about 30 per cent of our graduating Class receive the Review. This means that about 150 of us are up to date on M.I.T. activities, and, therefore, only that number have the pleasure of reading these notes. This may be the reason that the communications to the Class Secretary are few and far between. I still have in my file about 30 promises from various classmates and their wives, dated last June, that letters would be forthcoming. I don't know if these promises are negotiable, but if so, I'll discount them for a few postcards this coming Summer. Our notes will go bankrupt if our news receivable exceeds our current liabilities, and it's approaching the insolvent point rapidly. Don't fail me. — Richard M. Feingold, *Secretary,* 49 Pearl Street, Hartford 3, Conn.

• 2–44 and 10–44 •

At the writing of this column, during April, we have about 150 classmates planning to attend the reunion. A few of those definitely attending are: R. S. Bettes, P. H. Boucheron, R. G. Breck, Jr., Burton Bromfield, F. S. Carpenter, Jr., K. Cayce, J. Chamberlain, L. D. Corton, L. R. Demarkles, G. C. Docal, R. P. Dodds, L. C. Eagleton, J. B. Gardner, R. F. Garrard, J. Granlund, A. P. Hildebrandt, R. H. Hinchcliff, M. C. Hird, R. V. Horrigan, J. L. Hull, E. R. Jonash, H. F. Knape, J. M. Kogan, J. A. Lednicky, T. G. Loomis, A. Mackintosh, Jr., A. Madwed, G. Myers, Jr., K. W. Nelson, H. M. Paynter, R. D. Peck, E. A. Picardi, C. W. Ritterhoff, C. R. Robba, E. G. Roos, K. G. Scheid, S. A. Schilling, N. Sebell, J. Shrier, F. P. Stearns, J. E. Stevens, H. D. Taylor, L. Tyree, Jr., A. B. Van Rennes, A. A. West, R. H. Wood, J. Woodburn, Jr., C. L. Woodworth.

Ken Scheid reports that he has 35 members of the original Class of 1945 (now 10–44) who have chosen to affiliate with 10–44. This opportunity, Ken says, was worked out by the Alumni Association and Class Reunion Committee so that everyone could be under one tent come reunion time. All that is necessary is to fill out and return the cards Ken sent out.

Bruce Fabens sent a letter in from Grosse Pointe Farms, Mich., where he has been living for the past two years. Bruce was operating a small subsidiary of the Lamson and Sessions Company, and about six months ago decided things looked stable enough to buy a home and settle down. No sooner was this accomplished than he was transferred back to Cleveland as assistant office manager of the parent company. So Bruce, Ann, daughter Elizabeth, and son Bruce, hope to be settled in Cleveland at this writing. If the new job doesn't tie him down completely, you can count on meeting Bruce at Lenox in June.

In our group we have an engineer turned historian. Bob Bruce, now single and living in Malden, went on to B.U. for a Ph.D. in history. Currently, Bob is working on a book to be entitled *Lincoln and the Tools of War,* which he expects to be published sometime in 1954. Also in process is a biography of Edwin M. Stanton, on which Bob is collaborating with Dr. Benjamin P. Thomas.

If anyone should have any objections of 10–44 and 2–44 merging into a single unit of Class of 1944, we offer the Teixeira's as a glowing example. Tex himself is 2–44 and he found a young lady by name of Melissa Wood of 10–44, with whom he formed a merger under the heading of Class of 1944. So far they have produced one graduate, Eve Melissa, in October, 1953. No mention of any undergrads as yet. Tex is living in Belmont and working at Fabrin Research Laboratory in Boston.

Dick Garrad is working at G.E. in Schenectady as a requisition engineer and lives at Scotia, N.Y. Tony Urahio is at G.E., and Dick sees him occasionally. The Garrad family consists of wife Eleanor, Judith, four and a half, Pamela, two, and Bruce, three.

Bob Schick has been hunting for oil for the Utah Southern Oil Company as head of the exploration department. To date Bob hasn't been out of the badlands long enough to get married.

A tense communique in from Bob Oppenlander reporting that he is a management consultant with Cresap, McCormick and Paget of New York. However, Bob, his wife Jessie, and two children are living in Glencoe, Ill. Warren Mathews is with Hughes Aircraft Company in Culver City, Calif., after picking up a Ph.D. in physics from Cal Tech last June. Warren is married and should have had a second arrival in February. In the same department at Hughes is Ro Favreau with whom he roomed at Tech and he occasionally sees Hans Wohlwill, Bud Hartman, Art Beckington, Bill Lund, Pierce McDowell, Bob Nicolait.

Dick Kulda is at Computer Research Corporation at Redondo Beach, Calif. Dick is married and reports two children to date. Sam Parkinson dropped in on him on his way to Alaska for the U.S. Coast and Geodetic Survey. While in Detroit, Dick visited Jay Kogan, who is developing real estate and putting up commercial buildings. Jay is married and has two daughters, Lauren and Amy. We received a nice letter from Gonzalo C. Docal who is in Havana as factory manager for U. S. Rubber. Gonzalo says he will definitely be up to attend the reunion at Lenox and passes along the information that Ralph Laredo is with Liquid Carbonic in Cuba; Gordon McDowell is also in Cuba doing meteorological work for United Fruit; Andy Freites was in Cuba with Standard Oil but has returned to the Dominican Republic, and that Bill Hopkins is now working for the Naval Construction Company.

Liquid Carbonic also has Norm Callner as chief project engineer, a newly created position in their Chicago office. Norm's duties will include supervision of a plant improvement program, development work and construction of new plants. Prior to this appointment he was responsible for design, layout, purchasing construction and initial operation of new Liquid dry ice plants in Belleville, N.J., Philadelphia, Maracaibo and Caracas, Venezuela, and Montevideo, Uruguay.

Joe Schrier sends a memo down from Rocky River, Ohio, saying that he is married, no children, and works as sales engineer for the Monarch Aluminum Manufacturing Company. Bill van Rav-

ensway spent a week end with him while on his way to the Philippines after spending two years in Sumatra for Caltex. Joe sees a good deal of Ed and Marie Jonash and they often go fishing for the big ones in north Canada – 300 miles south of Hudson Bay, to be exact. How about bringing some pictures of those that didn't get away down to Lenox, Joe?

Warren Howard is living in Shrewsbury, Mass., just outside Worcester where he is employed by G.E. as a sales engineer. Warren, after leaving M.I.T., went on to study at B.U. and George Washington University. Recently he ran for School Committeeman in Worcester but to date I haven't heard if his contest was a success. Hope you made it, Warren. – BURTON A. BROMFIELD, *General Secretary,* 608 Grove Street, Newton Lower Falls, Mass.

• 2–46 •

Here's more dope gleaned from the questionnaires. Some of this has probably appeared before but cross-checking is a frightful job. From Houston, Roy Klein reports that he is now a project engineer with the Fluor Corp. designing plants for the petroleum industry – two children, Mary, four, and Dennis, two. Jim Bartlett, M.D., is currently interning in Rochester, N.Y. Bill McEwan, a senior engineer with Federal Telecommunication Laboratory in Nutley, N.J., tells us his family includes A. W., Jr., three, and Jean, one. Concerning your request, Bill, for Lou Martin's address, Lou is now a neighbor of mine at 28 Valley Road, Concord, Mass. He's a project engineer at the M.I.T. Servomechanisms Laboratory and has two girls, age three and one.

Others in the Boston area include John Blottman, doing research for the Tufts College Electrical Engineering Department. C. S. Lyon is studying at the Harvard Law School and working part time in the M.I.T. patent office. C. S. has one child, Claire, now nearly three. Dave and Grace Hoag just bought a house in Medway, Mass., and report "it can't be much good because it's already 190 years old and has only six fireplaces!" Anthony Sabelli is presently underwriting group insurance for John Hancock and has two daughters of the usual ages – three and one! Mason Lappin heads a plumbing and heating firm in Malden.

Frank Low lives next door to me in Concord, Mass. His wife, Claire, contracted polio in Mexico last summer and is currently recovering at the Children's Hospital in Boston. Another neighbor, Ted Heuchling, reports "nothing new since reunion except one lovely blue-eyed, towheaded girl." Bob Nelson now lives in Hopkinton, Mass., and works for Fenwal, Inc., manufacturer of thermoswitches. And John Perry is a development engineer with G.E. in West Lynn. He has a year-old daughter, Andrea.

From among those who deserted engineering for the bar we have heard from Tom Donnelly with the firm of Houston and Houston in Pittsburgh, Pa., and Don Wallace with Clark, Carr and Ellis in New York City. Marvin Hurowitz is also an attorney in N.Y.C. with two daughters, ages five and two.

A number of members of the Class are still (or again!) in the service. Captain Fred Gray is a medical officer in surgery at Westover Air Force Base, Mass. He got his M.D. at Yale in 1949. Larry Body is a naval aviator in Jacksonville – or at least was a year ago. Doug Crinklaw reports that he went to O.C.S. at, guess where, Naval Training Station, Newport, R.I. Yipes! Captain Gaylord MacCartney lists his address as "U.S.A.F." Others who were in and are now, presumably, out include Frank Stevens who when last heard from was executive officer on the U.S.S. *Arikara* and Herbert Keating, who was a ship design officer at Bath, Me. Frank has a daughter Jennifer, two, and Bert has two children – a boy, three, and a girl, one.

Three classmates are struggling to raise the standards of secondary education. John Marr is teaching math at the Cheshire Academy, Cheshire, Conn.; Harry Santangelo is an industrial arts instructor at New London (Conn.) High School, and Arthur Gregory is a science teacher at the Virgil (N.Y.) Central School between boxing bouts in Detroit and Buffalo. Others in the educational racket include Ned Bowman, Instructor in Industrial Management at M.I.T., and Norman Friedman, Instructor in English at the University of Connecticut. Ned married Bill Semple's sister, Ann, in 1948 and is completing work on his Ph.D. thesis for Ohio State. Norman has a six-year-old son and has published several articles, including three poems.

Paul Finefrock reports great success with his own company, The Roosevelt Material Company, Mountain View, Okla., which he started in 1950 and which deals in crushed limestone products. The letterhead has a bust of Teddy on one side and F.D.R. on the other! Paul has two children – Steve, four, and Nancy, one. Waller Conard is a subcontract engineer with Pratt and Whitney in West Hartford, Conn. Gilbert Marr reports that he is a structural squad leader (whatever that is) with Burns and Roe, Inc., New York City. He has two boys, six and four.

Well, that about winds it up for this month. We still have 30 or so questionnaires to report. Keep your letters coming. – WILLIAM M. SIEBERT, *Secretary,* 5 Martha's Point Road, Concord, Mass.

• 1947 •

The months pass by all too quickly – Alumni Day is upon us once more, marking our seventh year of departure from the hallowed halls of the Institute. And as the years pass on, '47 men are achieving, more and more, their share of prominence in profession, community and nation. Dick Johnston, Course VI, has been cited by the U.S. Chamber of Commerce as one of ten outstanding young men in federal service. Dick has been with the A.E.C. radiation instrument branch, first at Oak Ridge and now in Washington, since a year after graduation. Pete Callejas was most active in his community during the recent Red Cross fund campaign. Pete served as a leader in Wakefield's town-wide solicitation. In addition he serves as vice-president of the Couples' Club of the Congregational Church. He is presently with the Boston consulting firm of Camp, Dresser and McKee.

John Hunter has been promoted to a vice-presidency with the Oxford Manufacturing Company of Atlanta, Ga., as manager of shirt merchandising. John has been with the Oxford Company his entire professional career. Herb Wieland, director of city planning for Methuen, has been advising the city of Lawrence on the need for a full-time city planner. His testimony before the Municipal Planning Board of the latter city led that body to the conclusion that this must be the first step in their Urban Redevelopment Program. Dick Mooney has been appointed a technical service representative for Continental Oil Company's petrochemical department, with headquarters in New York City. Dick resigned his position as district sales manager with Great Lakes Carbon Corporation of Philadelphia, Pa., to accept the new appointment.

Hugh Flomenhoft has left the Navy Bureau of Aeronautics in Washington to join the McLean Development Laboratories, Inc., of Copiague, L.I. I spoke to Hugh's wife, Lorrie, while she was in Boston visiting her family with her 14-month-old daughter, Debbra Jane, and she filled me in on the details. The ironic part of the movie is that Hugh had just finished building his house in Arlington, Va., – virtually with his own two hands – when the new position came along. He's a never-say-die type, however, and Lorrie tells me he's all ready to start from scratch again in Long Island, although for her part, she'd just as soon move into a ready-made house. Frank Barry has joined the research department of United Aircraft Corporation; and Dave Kobick is now the District Manager for Standard-Knapp Company, manufacturers of automobile packaging systems for industry, in Chagrin Falls, Ohio. Dave has three children and a new home to house them in.

Howard Miller closed his architectural practice in Colorado to become an architect and planner for the firm of Daniel, Mann, Johnson and Mendenhall, international architects and engineers, in Los Angeles, Calif. Ted Thomas, having been awarded a law degree from Georgetown University and having been admitted to the bar of the District of Columbia, is now a patent lawyer for American Cyanamid Company in Stamford, Conn. Al White is chief, Development Engineering Branch, Office of Production Co-ordination in the Santa Fe, N.M., Operations Office of the Atomic Energy Commission. The Hamilton Standard Division of United Aircraft Corporation can boast of three classmates in their organization – Pete Moggi and John Raye as senior analytical engineers, and Paul Moschella as a staff assistant, technical.

A few of our classmates have been breaking into print of late, and in some fairly reputable magazines, too. Arnold Judson, Assistant Personnel Manager at Polaroid, published an article titled "A New Approach to Executive Selection" in the March–April issue of the *Harvard Business Review.* Kevin Lynch, an assistant professor in city planning at the Institute, wrote on "The Form of Cities" in the April issue of the *Scientific American.* "Aromatic Chemicals from Petrole-

um" was the subject of a paper presented by Dan Maisel before the Philadelphia Section of the American Chemical Society. Dan is in the Development Division of the Standard Oil Development Company. The Rev. George Brooks has accepted an invitation to become minister of the Second Parish Church (Unitarian) of Saco, Me. George took his theological training at the Harvard Divinity School.

Finally it is my sad duty to report the deaths of two of our classmates. Mark Sullivan passed away on February 19 at his home in Worcester after a long illness. He was 27. At the time of his death, Mark was chief purchasing agent for the A.E.C. plant operated by Union Carbide and Carbon Company at Paducah, Ky. William Pick died on March 9. We have no further details. We extend our sincere condolences to the families of these two men. — CLAUDE W. BRENNER, *General Secretary*, 1470 Beacon Street, Brookline 46, Mass.

• 1950 •

Art Wolters dropped us a line from Niagara Falls to tell of his doings since graduation. "After reading the last issues of the Review, I think it is my duty to point out that Du Pont maintains a few other activities besides the Experimental Station in Wilmington.

"In June, I will be completing my third year at the Niagara Falls plant of Du Pont's Electrochemicals Department. I am now supervisor of a plant which converts methanol, chlorine, and hydrogen to our line of chlorinated hydrocarbons. This very interesting job covers everything from distillation problems to mothering two fleets of tank cars with liberal doses of labor relations, cost work, and finding water leaks into anhydrous acid systems.

"The big news, however, is my engagement to Patricia Moyer, of Niagara Falls. She is presently a first grade teacher in Kenmore and will become Mrs. Wolters on July 24 in St. Paul's Methodist Church."

Art also mentions that Tom Roger Keane arrived with Niagara's Du Pont last September. He's working in the semiworks section of the Research Division. My only defense of all my reference to Du Pont's Wilmington Experimental Station is that they have a darn good public relations man down that way.

From New Jersey, we hear from Dan Fawcett — "Last September 6, Nancy Ayers of West Orange and I were married and are now residing at Lake Parsippany, N.J. I am currently employed by the Monrobot Corporation, a subsidiary of the Monroe Calculating Machines at Morris Plains, N.J."

From Sherbrooke, Quebec, we hear of the doings of Dave Marcus. "In December, 1952, I was made assistant sales manager of the flooring division of the American Biltrite here in Canada, and sales manager last November. Have been with this company since we left the Charles — and haven't a kick in the world except that Canada sometimes seems to be too big of a hunk of it. I travel coast to coast — 4,300 miles —. There are 15 million people spread out in this territory which is bigger than the U.S.A. However, the tremendous growth construction (this is what effects me) and whole 'new country atmosphere' gives me a terrific kick. In addition it never hurts to settle down in a foreign country for a while. It gives you a better perspective of the States.

"Oh yes — still single — Emel Haup writes regularly. The Army finally grabbed him after he put in a year with Allied Chemical and Dye in Delaware. He had gotten his master's degree in Course X in 1950. Jack Mohr is with Dow Corning in Danville, Ky. That will be about it for now. If you or anyone else from '50 goes to Montreal, Quebec City, or through Sherbrooke, look me up. I can guarantee the single guys a wild time and can act as travel agent for the others. Any member of the Class that passes through Sherbrooke on their way North, and doesn't stop will be put on the 'Queen's Black List.'" — Thanks for the information, Dave, and I promise to stop in if and when I go up North.

John Chatten, James Bryan'51, and Edward Chatterton, Jr., all recently received coveted Achievement Awards from D. B. Smith, Vice-president of Research, Philco Corporation. The annual Achievement Award is presented to outstanding members of Philco's research and engineering organization for meritorious achievement in the performance of their work. All three of the boys are at the Philadelphia plant.

Joseph Oppenheim has been working for Glenn L. Martin Company in Baltimore, but will be assuming a post as field service representative for Glenn L. Martin in Florida in the near future.

Harold Noreen is working for Carpenter Paterson, Inc., in Laconia, N.H. The Company, an old Boston Company which manufactures all types of pipe hanger and supports, moved all of its production department to Laconia in January, 1953. Harold is production manager for the new plant which covers 34,000 square feet.

Leonard Lann and Arlene Greenberg were married on Sunday, April 11, 1954, in Beth El Temple, Springfield, Mass. Len is employed with the Worthington Corporation of Harrison, N.J.

Francis F. Lee and Teresa Jen were married on February 20, 1954. Teresa and Francis went to the same school in China before the Communists took control of his homeland. Francis received awards from the National Resources Committee in 1947 while he was studying at Nanking and came to M.I.T. He received his bachelor's with our Class, his master's in 1951, and has recently become a research engineer in Servomechanisms at Tech. Teresa came to the States from Formosa and studied food technology at the University of Massachusetts.

Florence and Martin Osman have recently (April 18) become happy parents to a seven pound, two and one-fourth ounce baby boy, named Willard Samuel. The Osman's are living at 62 Lafayette Street, Waltham, Mass. — JOHN T. WEAVER, *General Secretary*, 18 Buena Vista Park, Cambridge, Mass.

• 1951 •

Your Secretary wishes to reiterate the standing invitation to all of you '51 men to send in a few words about yourselves. Strangely enough I'm beginning to believe we have too many modest people in the Class of 1951. Do you think the situation qualifies for an honorable mention in the Believe It or Not column? Before getting down to business may I extend warmest sympathy to Stan Buchin, '52 Class Secretary, who states that Army life today is rugged???

Sir Stork visited Bob and Sue Cushman in February at Boulder, Colo. The newcomer: Tom Cushman hitting the scales at 124 ounces. Congratulations to you both. And we hope that Bob is now back to normal! Sam Rubinovitz became engaged to Phyllis Silverstein of Manchester, Conn. Sam is a first john (Air Force) at Wright-Patterson Base, Dayton, Ohio. They will walk the bridal path in September.

Marc Aelion sent in a short note. On March 28 he was wed to Iris Latow in Springfield. He and his bride sailed to Sao Paulo, Brazil, in April. For those of you who wish to visit Marc or to drop a note, his address is: Rua Washington Luiz, 325, Sao Paulo. Dave Kallander took Barbara Bentley as his wife at Rome, N.Y., in January. Dave is currently employed as a chemical engineer in civilian status at the Rome Air Development Center, Griffiss A.F.B., Rome, N.Y. Hank Marsh joined the benedict group when he and Carolyn Stirland said "I do" in April at Wilmington, Del. Dave Schoeffel and Pat Thomson became Mr. and Mrs. in January at Longmeadow. Dave is a chemical engineer for Monsanto Chemical Company. Paul Smith and Gretchen Ferris were married in March at Waban. Congratulations and good luck!

Curt Barker is working with the Human Resources Research Institute of the Psychological Warfare Division at the Maxwell A.F.B., Alabama. Chiranjio Batra is doing chemical engineering work at the Burmah-Shell Refineries, Ltd., Bombay, India. F. P. Galvin Whitaker is now associated with the Department of Economics of the Leeds University, Leeds, England. Gordon Zucker reports that he was separated from the Army in June, 1953. He has been working as a graduate research assistant at the University of Wisconsin since June. The research work is centered on taconite beneficiation.

Jim Banister, writing from sunny California, reports that after being released from the Air Force last August he secured employment as assistant contracts manager at the Stanford Research Institute of Menlo Park, Calif. Averil Chatfield is a research analyst in the research and analysis department of the Northrup Aircraft, Inc., at Hawthorne, Calif. Dick Cole reports that he has been with the Reynolds Metals Company as a metallurgical engineer since leaving M.I.T. At present he is in charge of a new cryolite recovery plant, which is now in production, recovering cryolite from pot room gasses and discarded aluminum pot lining. Bill Dennett spent two and a half years at Newport News' Hull Technical Department. He and his wife, Bunny, decided to return to their home town. Bill is now employed in the Scientific and Tests Branch of the Design Division at Portsmouth Naval Shipyard, N.H.

Tom Meloy is working as a metallurgist in the J-73 Engine group of the Aircraft Gas Turbine Division of G.E. at Cincinnati, Ohio. Paul Murphy joined the communication department of the N.Y. Central System at Indianapolis. Paul had previously been an instructor in electronics at Tech at graduation. Al Newcombe has moved from the Bethlehem Steel Company Shipbuilding Division at Quincy, Mass., to the Solvay Process Division of the Allied Chemical and Dye Corporation at Syracuse, N.Y. Al reports that he has a wife, the former Ginny Archer of Marshfield, Mass., and a baby daughter, Debbie, 0.75 years old.

George Turin is working at M.I.T.'s Lincoln Laboratory and aiming for a doctor's degree in E.E. Lloyd Smiley is now a staff engineer with Drake, Startzman, Sheahand, and Barclay, Distribution and Materials Handling Consultants. Your Secretary, after spending several weeks at the I.B.M. Sales Office in Albany to study sales and service problems connected with I.B.M. installations, has completed his general manufacturing training program. He is now in the Manufacturing Planning Section of the Industrial Engineering Department at I.B.M.'s Poughkeepsie plant. I hope each one of you who visit Tech during Alumni Day activities has a very enjoyable time. See you next month. — STANLEY MARCEWICZ, *Secretary*, Route 2, Highland, N.Y.

• 1952 •

As I was preparing myself to write this little gossip column, Bob Briber's Class President's Letter arrived. After eagerly ripping open the envelope, I read with deep disappointment that only about 100 people in the Class receive the Technology Review and this column monthly. May I therefore appeal to the small band of loyal readers to each notify two classmate friends that "to receive the Technology Review and all the news of a great school and of the greatest Class (which else?), a donation to the Alumni Fund will do it." Just a small amount of personal salesmanship will do it. So to all the old Alumni of the Class of 1952 (it's now two whole years), here's to a 100 per cent donation year.

This past spring was an extremely slow time for the '52 men; there are only two marriages to report this month. Lorraine Morin, receptionist at the M.I.T. Instrumentation Laboratory and a graduate of Chamberlain School of Retailing, and Oliver Hall rang out the old year (1953, that is) by being married on December 31 in Boston. The Halls are presently residing in Brookline, Mass.; Oliver is also employed by the Instrumentation Laboratory. A more recent occurrence was the wedding on February 27 of Janet Murphy, a Boston University graduate, and George Bradley in Lexington, Mass. After a whirlwind honeymoon in Ireland, England, France, Switzerland, Italy, and Germany, the Bradleys are now residents of Bridgeport, Conn., where George is employed as an extrusion engineer with the Bridgeport Brass Company.

Dipping into the mailbag, we find a letter from Bob Schwanhausser, the old Voo Doo medicine man and now a First Lieutenant in the Air Force. Bob writes as follows: "To begin, I'll fill you in on the Swan and drag in others as I go. After leaving the Great Court and what not I went to Wright Air Development Center (Wright-Patterson Air Force Base) with Gus Rath and Phil Schirm. After living with them for five weeks, they found a home for me at Holloman Air Development Center, New Mexico. This is the Air Force half of White Sands. It is located 92 miles north of Juarez, Mexico, and in the middle of nowhere. I have been Project Officer of OQ-19 and XQ-2 and am now in Range Operations in charge of Scheduling and Range Control. Larry Mayer of Wright Air Development Center makes occasional official trips to Holloman and we tipple martinis at great length. He, by the way, was our first house guest.

"Oh, yes — I read in your column that Don West was married October 17, 1953 — so was I, to the tall girl who swiped your beer mug during Senior Week — Mary Lea Hunter. A lot of the gang came to the wedding and I will report on them a little later. Between August 24, 1953 and September 5, 1953, the Air Force sent me to M.I.T. for a course in Automatic Control of Aircraft. This was while I was still on XQ-2 and the greatest problem was roll stabilization. Of course, three days after returning, I was transferred off the project. Well, anyhow it was a nice trip to Boston. Last summer I lived with Don Hendrickson (S.M. in Chemistry, 1950) in Cloudcraft, New Mexico, 16 miles from the Base up 9,000 feet in the mountains. At the present time, my wife and I live at the Base. We are now in the midst of a furious dust storm. What a mess.

"Gene Erbin was recently called into the Air Force and is at Wright Air Development Center. He is married, as is Jerry Hathaway, who is stationed at Fort Devens. Both are expecting offspring. Mike Chivers married Nancy Horne, Bill Greene's secretary, one of my wife's cohorts at the stag banquet. Mike Lacey (Lt.) is now stationed at Osmara Onetrea (I hope it's spelled correctly). Bob Boole has been at Fort Monmouth and is soon to leave the service. Larry Buckland is still at M.I.T, working, I think. For a while he was an Arthur Murray dance instructor in Boston. Charlie Fletcher is on Mount Washington with the Aero Icing Laboratory. I notice everyone asks where is Joe Alibrandi — I'll echo that one.

"My wife and I stopped at the Ken Childs' household following our honeymoon. Ken had just become the proud poppa of a son, Larry, and within a week was to graduate from pilot school. He was then heading to Georgia in the Air Defense Command for transition to F-94-C8s. Old Ken is a true converted jet jockey and called me a 'ground pounder.' Actually I flew jets before him but they were all remote controlled. My time in the Air Force is fast fleeting and I will be glad to leave in July. Whooopee! Guess that's all. Greetings from the Land of Enchantment and such rot."

Now is the hour for all good Army men who went in in June, July, and August 1952 to be shedding their OD's and khakis. It was certainly nice to have the 24 months cut down to 21. Among new misters that I know about are Sam Mitchell, now believed to be wandering about the Western hinterlands looking for a trout stream, an easy golf course, or a million dollars to buy them; Steve Learnard, speaking Korean with his Boston accent; Lou Karvelas, ruminating about Albuquerque, N.M., prior to going to either Stanford or Harvard Business School in September. — STANLEY I. BUCHIN, *Secretary*, 150 Tryon Avenue, Englewood, N.J.

• 1953 •

From the sound of the weather outside it might be safe to assume that the rainy season has come to this "land of the Morning Calm." Today is Palm Sunday here in Korea as elsewhere on the calendar anywhere. For the first Sunday in three we had the men working out on the job. The general wanted the new quarters for his portion of his G-2 section completed so we complied with the gentleman's desires.

The mail is as scanty this month as the article of clothing which covers Marlene Dietrich from the waist up as she goes through her routine in some Nevada night-spot. I have a few penned notes here from Lionel Kenney and Berni Kelly — the rest, post cards and clippings (courtesy of the Class Notes section of The Technology Review). Immediately after graduation Lionel spent about six months doing various and sundry jobs at Thule Air Force Base in Greenland. He progressed very well. Started out as a rod man in the surveying section and by the end of his stay he held the position of Junior Engineer in the Engineering and Design Department. The last words from him indicated that our Great Uncle desired his presence at Aberdeen Proving Grounds. The dress for the occasion was a forest green blouse with shade 71 (can't swear that the army and I agree on this number) trousers.

The news from Berni Kelly — well the engraved invitation mentioned Joan Roberta Quinn and the date of the ceremony was Saturday, February 20. My regrets to Berni and Joan for not being able to attend the festivities — the C.O. cancelled all three day passes for that weekend.

The mail from Ralph Anglin is a little slim but his wife, Glo, is a jewel on letter writing and all else. Glo says that "Ralph's pride and joy made her entrance at 11:30 A.M. on Saturday, February, 20." Now Robbie (Ralph and Glo's son) has a baby sister to contend with.

A quick look at the post cards tells of James Wynne's activities as assistant director of research at Kiekhaefer Aeromarine Motors. Jim is conducting tests on engines at the Navy Air Missile Test Center in Point Mugu, Calif. Al Dougherger mentions his state of contentment at the Process Engineering Division of Arthur D. Little, Inc. Ed Durian, who recently joined the Hamilton Standard Division of United Aircraft Corporation, was a little concerned about his subscription to the Review. I mention Ed's concern merely as an entrée for a suggestion to those of you who do have questions regarding your subscriptions. I know that if you send them to the Review Office that you will receive

prompt and courteous attention. (That last sentence ought to be worth a free subscription – seriously though I have never worked with a more co-operative and helpful group of people than those on the Review Staff.)

A press release from Stanford Research Institute sheds some light on the activities of Dr. Robert H. Eustis (ScD '53). Formerly chief engineer of the Thermal Research and Engineering Corporation, he is now on the physics staff of the Stanford Research Institute. The Doctor's post activities include three years as an assistant professor of mechanical engineering at Massachusetts Institute of Technology and three years with the National Advisory Committee for Aeronautics.

A few notes on some comrades in arms. Private Robert Tessier has joined the 56th Military Police Company at Camp Gordon, Ga. He is classified as a photographic assistant. Captain Reuben Pomerantz (MS '53) has been assigned to a project in Chicago whose purpose is to study the possibility of sterilizing food by ionizing radiations. I have one more happy tidbit before I leave to check the guard for the evening. Daniel Fairbanks (ScD '53) and the former Mary Ann Dineen were married on December 27, in Augusta, Me. Mrs. Fairbanks attended the University of Maine and received her master's degree in education from Boston University. Fairbanks is an assistant professor of Chemical Engineering at M.I.T. Time for the checking of guard. I undertand that science has now made it possible for a female rabbit to produce little fellows without the aid of the male. No hope for similar circumstances among us humans as yet. I still, like the female homo sapiens, very happily, require the virility of some outside source (namely, your letters) in order to give birth to these class notes. – VINSON W. BRONSON 04003242, *Secretary* Co. B. 2nd Eng. Com. Bn. A.P.O. 248, c/o Postmaster San Francisco, Calif.

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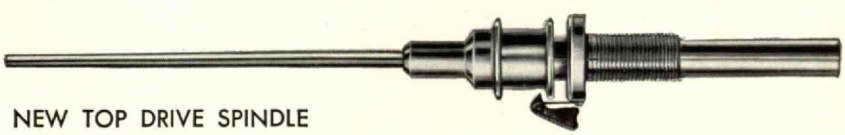

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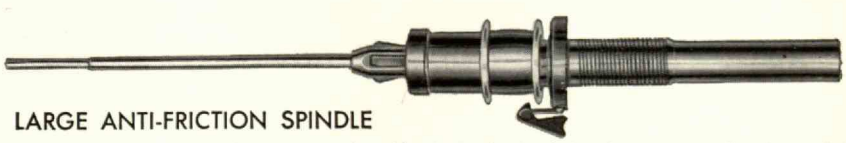

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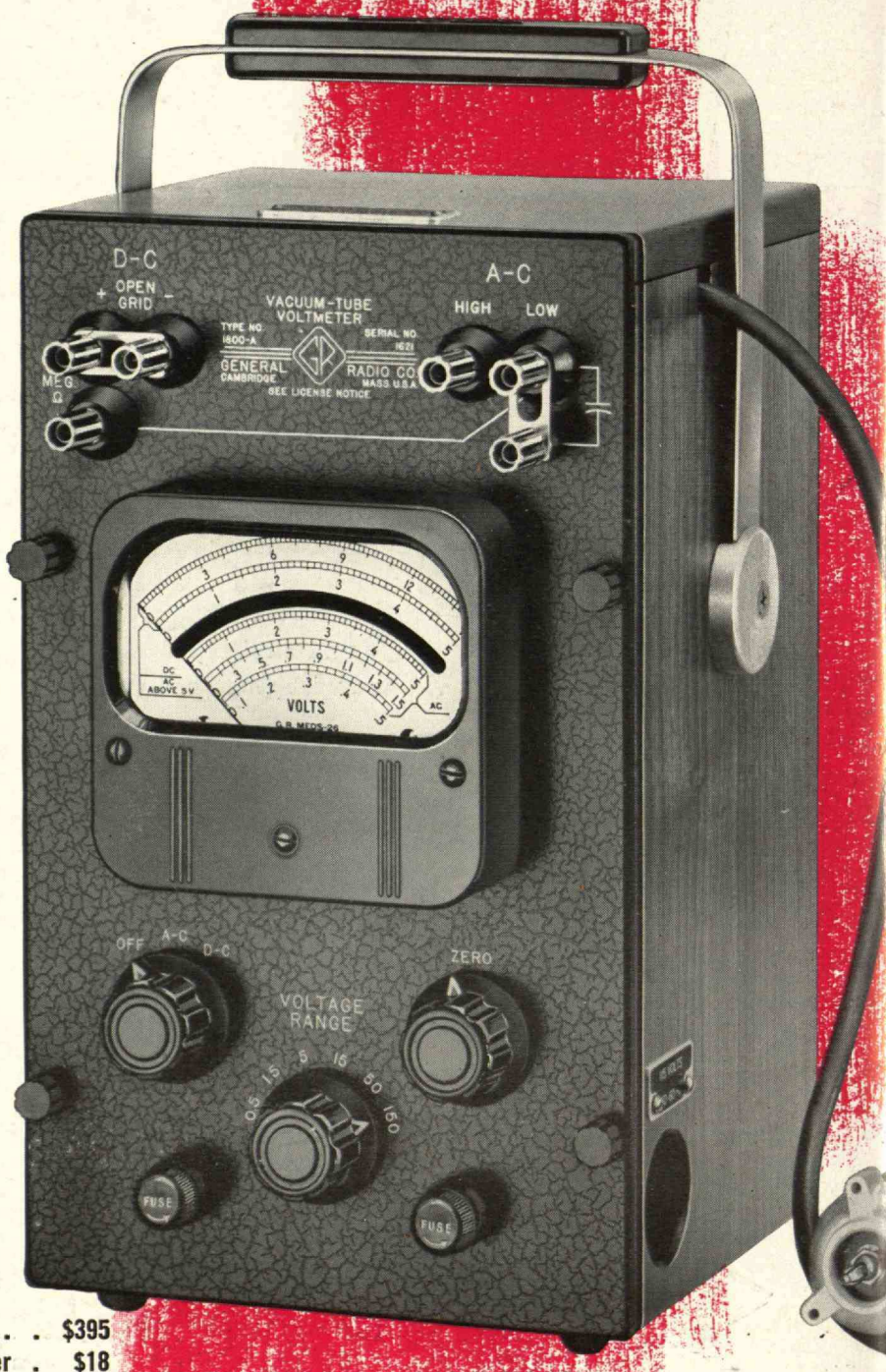

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